

Final Environmental Impact Statement  
and Draft Management Plan  
for the proposed  
**MASONBORO ISLAND COMPONENT**  
of the  
NORTH CAROLINA  
NATIONAL ESTUARINE SANCTUARY

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE  
SANCTUARY PROGRAMS DIVISION

North Carolina  
Department of Natural Resources and Community Development  
Office of Coastal Management





United States  
Department of Commerce  
FINAL ENVIRONMENTAL IMPACT STATEMENT  
and  
DRAFT MANAGEMENT PLAN  
for the proposed  
MASONBORO ISLAND COMPONENT  
of the  
THE NORTH CAROLINA NATIONAL ESTUARINE SANCTUARY  
September 1984

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**DESIGNATION:** Final Environmental Impact Statement and Draft Management Plan for the proposed addition of Masonboro Island as the Fourth Component of the North Carolina National Estuarine Sanctuary.

**ABSTRACT:** The State of North Carolina has proposed designation of Masonboro Island as the fourth component of the North Carolina National Estuarine Sanctuary.

The North Carolina National Estuarine Sanctuary presently consists of three components: 1.) Zeke's Island, New Hanover County (466 hectares/1,165 acres), 2.) Rachel Carson, Carteret County (810 hectares/2,025 acres), and 3.) Currituck Banks, Currituck County (1,122.8 hectares/2,807 acres). Fee simple acquisition is complete for Zeke's Island and Currituck Banks, while the final tract at Rachel Carson is presently being negotiated. These three components were established by a total \$1,767,100 grant award from the National Oceanic and Atmospheric Administration (NOAA). This award has been matched by an equivalent amount of state funds from land donations and bargain sales and services.

Proposed facilities at the components primarily consist of boardwalks and interpretive trail developments, and a small public beach recreation area (parking lot and restrooms) planned for Currituck Banks. Memoranda of understanding would be developed between the North Carolina Office of Coastal Management and applicable research/educational institutions and governmental agencies.

The Masonboro Island marsh/estuarine area encompasses approximately 87% of the island's 2,018 hectares (5,046 acres). This undisturbed natural area already serves as a locally prominent natural laboratory for research and educational purposes. Masonboro Island has an embayment basin type with bar-bound structure, an estuarine type not presently represented in the Carolinian biogeographic region of the National Estuarine Sanctuary Program.

Masonboro Island would be acquired with federal financial assistance that the State has requested from NOAA. If approved, the supplemental acquisition award would be matched by an equivalent amount of state funds, already available from previous land donations and bargain sales received in the acquisitions of the first three components, and services for acquisition of privately-owned



uplands. Proposed facilities would primarily consist of a boat dock, boardwalk, and interpretive trail construction. Research facilities and accommodations are situated at nearby Carolina Beach State Park, the Marine Resources Center at Fort Fisher, and the University of North Carolina at Wilmington. Proposed memoranda of understanding between these institutions and the sanctuary program would detail uses and responsibilities.

The proposed component would be primarily used for research and educational purposes, especially to provide information for use in coastal zone management decisionmaking. Multiple use would be encouraged to the extent that it is compatible with the proposed component's research and educational programs. Research and monitoring in and near the proposed component would provide baseline information against which the impacts of human activities elsewhere in the North Carolina estuarine environment and the Carolinian biogeographic region could be assessed. These activities will also provide the data base upon which to develop strategies for protecting or rehabilitating similar estuarine ecosystems.

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Natural Resources and Community  
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Office of Coastal Management

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### LIST OF ACRONYMS

AEC	Areas of Environmental Concern
AIWW	Atlantic Intracoastal Waterway
CAMA	Coastal Area Management Act
COE	Corps of Engineers
CP&L	Carolina Power and Light Company - Brunswick Biological Laboratory
CZMA	Coastal Zone Management Act
DMF	Division of Marine Fisheries (North Carolina)
DMP	Draft Management Plan
DNRC	Department of Natural Resources and Community Development
DOC	Department of Commerce
DPR	Division of Parks and Recreation (North Carolina)
ECU	East Carolina University
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
LRIS	Land Resources Information Service
MP	Management Plan
MRC	Marine Resources Center
NCNES	North Carolina National Estuarine Sanctuary
NCU	North Carolina State University
NESP	National Estuarine Sancturay Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCM	Office of Coastal Management (North Carolina)
OCZM	Office of Coastal Zone Management (NOAA)
OCRM	Office of Ocean and Coastal Resource Management (NOAA)
REICEP	Research and Education Information Coordination and Exchange Program
UNC	University of North Carolina
UNC-W	University of North Carolina-Wilmington



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## SUMMARY

Section 315 of the Coastal Zone Management Act of 1972 as amended, 16 USC 1451, provides states with 50 percent matching grants for acquiring, developing, or operating areas that provide students, scientists, and the general public with places to learn about natural and human processes within the estuarine environment. In 1983, the Department of Commerce (DOC) awarded North Carolina \$454,100 to begin the establishment of a multiple-site Sanctuary. The establishment of the first two components--Zeke's Island and Rachel Carson--began with this initial grant. By the close of FY 1983, North Carolina received supplemental grants of \$61,263 and \$1,251,737 to continue administration of these sites and to acquire the third component located on Currituck Banks. These sites include approximately 2,400 hectares (6,000 acres) of terrestrial and estuarine habitats.

Lead management responsibility for the North Carolina National Estuarine Sanctuary (NCNES), including the development of the present management plan, liaison with affected state agencies, grant administration and coordination of acquisition, has been assigned to the Office of Coastal Management (OCM) within the Department of Natural Resources and Community Development (DNRCD). The sites will be managed as a system, though each component has its own character and its own needs. This requires an individual approach for managing each site to protect its valuable and unique resources for future generations.

The proposed action, the designation of Masonboro Island as the fourth component of the NCNES, involves the application by the State of North Carolina for a supplemental grant award to the Office of Ocean and Coastal Resource Management (OCRM). This site was selected for this proposal by a nomination process completed during 1980 when the OCM concluded that a multiple site system was needed and that the four previously mentioned components be given initial priority.

Masonboro Island is located in New Hanover County, North Carolina and consists of approximately 2,018 hectares (5,046 acres): 87% is marsh/estuary and 13% is uplands. The site is an outstanding example of a pristine non-drowned river mouth estuary associated with an entire, undisturbed barrier island. It represents an estuarine type not presently included in the Carolinian biogeographic region of the National Estuarine Sanctuary Program (NESP). Similar barrier islands along the southeastern coast of North Carolina are under intense development pressures and Masonboro Island may suffer a similar fate in the near future if it is not preserved.

Considerable public support exists for preservation of the island, but funding to purchase all of the privately owned tracts (approximately eighty-one) has not been available. A number of newspaper articles have appeared in the Wilmington Morning Star in support of saving Masonboro Island. A public interest group, the Society for Masonboro Island, held a public meeting in Wilmington on October 26, 1983, that was widely publicized in the local news media. The OCM staff was invited to that



meeting to explain the NCNES program and the state's intentions relative to acquisition and protection of the area.

This final EIS presents four alternatives for the proposed action. The preferred alternative is the acquisition of the entire Masonboro Island complex. The no action alternative would involve no acquisition by the State and therefore no control over the potential development of the island. Two other alternatives describe estuarine sanctuary boundaries which encompass different portions of the island complex.

Because the majority of the site consists of intertidal and subtidal lands held in trust by the state, acquisition efforts for the preferred alternative will concentrate on the natural uplands of the sandy barrier. Acquisition of sound-side spoil areas will be a second priority.

Management of the site will be according to the goals and objectives of the approved management plan for the NCNES. Specific policies for Masonboro Island are presented in this final EIS and draft management plan.

Principal resources affected by the proposal include, in general, the barrier beach ecosystem and the associated embayment estuarine type. The island area supports a wide array of terrestrial and estuarine biota. Endangered species including the brown pelican, peregrine falcon, and the threatened loggerhead sea turtle use the area for feeding or nesting activities. Plant and animal species of special interest occur in the area, including tough bumelia, osprey, ipswich sparrow, colonial nesting waterbird colonies, and a number of polychaete and tunicate species. The natural features include a microtidal transgressive barrier island with a low profile which is frequently overwashed by storm tides. Habitats present include maritime forest, shrub thicket, high and low salt marsh, grassy flats, dunes, and ocean beach. Masonboro Sound supports an active local fishery and serves as a primary nursery area for marine and estuarine fish and shellfish species.

The environmental effects of the proposed action would be beneficial in terms of research, education, traditional uses, and natural resource protection benefits. There would be no adverse impacts to residents because the island is uninhabited.

The adverse impacts of the proposed action would be loss of tax revenues and loss of potentially developable property. However, the approximately \$1,625 paid in county taxes each year would be offset by additional income from local services required by researchers, educational groups, etc. attracted to the site. Much of the island is presently undevelopable because of county and state setbacks and other regulations. In addition, Masonboro Island is within the Undeveloped Barrier Island System under the Federal Coastal Barrier Resources Act of 1982 (16 USC 3501). Federal financial assistance for public improvements for development in this area will not be available. The act also provides that federal flood insurance will not be available in the area for structures built after October 1, 1983.



The no action and boundary modification alternatives will have an adverse effect on the biological resources of Masonboro Island. Owners of the island developments would benefit in the short-term, but deterioration of water quality and associated fishery resources along with destruction of upland habitats will negatively impact terrestrial and estuarine biota in the long-term.

No irreversible or irretrievable commitments of resources would occur with the preferred alternative other than those resources committed to facilities construction (e.g., simple boat dock, interpretive trail with boardwalk) in support of the management plan goals, objectives, and policies.



## PART I: INTRODUCTION

### A. The National Estuarine Sanctuary Program

#### 1. Legislation/Authority

In response to intense pressures on the coastal resources of the United States, Congress enacted the Coastal Zone Management Act (CZMA), which was signed into law on October 27, 1972, and amended in 1976 and 1980. The CZMA authorized a Federal grant-in-aid and assistance program to be administered by the Secretary of Commerce.

The CZMA affirms a national interest in the effective protection and development of the nation's coastal zone, and provides financial and technical assistance to coastal states (including those bordering on the Atlantic and Pacific Oceans, the Gulf of Mexico, and the Great Lakes) and U.S. territories to develop and implement state coastal zone management programs. The act establishes a variety of grant-in-aid programs to such states for purposes of:

- developing coastal zone management programs (Sec. 305);
- implementing and administering coastal management programs that receive Federal approval (Sec. 306);
- avoiding or minimizing adverse environmental, social, and economic impacts resulting from coastal energy activities (Sec. 308);
- coordinating, studying, planning, and implementing interstate coastal management activities and programs (Sec. 309);
- conducting research, study, and training programs to provide scientific and technical support to state coastal zone management programs (Sec 310); and
- acquiring land for estuarine sanctuaries and island preservation (Sec. 315).

Section 315 of the act establishes the National Estuarine Sanctuary Program (NESP) to provide matching grants to states to acquire, develop, and operate natural estuarine areas as sanctuaries, so that scientists, students, and the general public may be provided the opportunity to examine the ecological relationships within the areas over time. Section 315 provides a maximum of \$3 million in federal funds, to be matched by an equivalent amount from the state, to acquire and manage lands for each sanctuary. The regulations for implementation of the NESP are found at 15 CFR Part 921. Final regulations revising the NESP Regulations (see Appendix 2) were published on June 27, 1984, in 49 Federal Register 26502 (to be codified at 15 CFR Part 921).

Under Section 315 of the CAMA, the Assistant Administrator for Ocean Services and Coastal Zone Management, on behalf of the Secretary of Commerce, designates estuarine sanctuaries. This Environmental



Impact Statement and Management Plan is prepared in accordance with the provisions of the National Environmental Policy Act of 1969, as amended, 42 USC 4321 et seq., to analyze the environmental and socioeconomic impacts of establishing the proposed Masonboro Island Component of the North Carolina National Estuarine Sanctuary (NCNES) and implementing the management plan for the site.

## 2. Objectives and Purposes

Uses of national estuarine sanctuaries are intended to serve objectives such as the following:

- to enhance resource protection by implementing a long-term management plan tailored to the site's specific resources;
- to gain a more thorough understanding of ecological relationships within the estuarine environment;
- to make baseline ecological measurements and serve as a natural control in order to monitor changes and assess the impacts of human stresses on similar ecosystems;
- to provide, through resource interpretive programs, a vehicle for increasing public knowledge and awareness of the complex nature of estuarine ecosystems, their values and benefits to man and nature, and the problems confronting them;
- to promote federal-state cooperative efforts in managing estuarine areas; and
- to encourage multiple use of estuarine sanctuaries to the extent that such usage is compatible with the primary sanctuary purposes of research and education.

To ensure that the NESP includes sites that adequately represent regional and ecological differences, the program regulations establish a biogeographical classification scheme that reflects geographic, hydrographic, and biological characteristics. Eleven (11) biogeographic categories are defined in the program regulations. Sub-categories of this basic system are developed and utilized as appropriate to distinguish different subclasses of each category.

In addition, the NESP Final Regulations (Appendix 2) details typological categories including sub-categories of estuarine biology, geology, hydrography, and chemistry.

Estuarine sanctuaries have the dual purposes of (1) preserving relatively undisturbed areas so that a representative series of natural estuarine systems will always remain available for ecological research and education, and (2) ensuring the availability of natural areas for use as a control against which impacts of human activities in other areas can be assessed. These sanctuaries are to be used primarily for long-term scientific and educational purposes, especially to provide information useful to coastal zone management decisionmaking.



Research purposes may include:

- Gaining a more complete understanding of the natural ecological relationships within the various estuarine environments of the United States;
- Acquiring baseline ecological measurements;
- Serving as a natural control against which changes in other estuaries can be measured, and aiding in evaluation of the impacts of human activities on estuarine ecosystems; and
- Providing a vehicle for increasing public knowledge and awareness of the complex nature of estuarine systems, their benefits to people and nature, and the problems confronting these ecosystems.

While the primary purposes of estuarine sanctuaries are scientific and educational, multiple use of estuarine sanctuaries by the general public is encouraged to the extent that such usage is compatible with the primary sanctuary purposes. Such uses may generally include low-intensity recreational boating, fishing, shellfishing, hunting, and wildlife photography or observation. Commercial fishing and shellfishing may also be compatible uses.

The Federal regulations envision that the NESP will ultimately represent the full variety of regional and ecological differences among the estuaries of the United States. The regulations state that "the purpose of the National Estuarine Sanctuary Program...shall be accomplished by the establishment of a series of estuarine sanctuaries which will be designated so that at least one representative of each estuarine ecosystem will endure into the future for scientific and educational purposes" [15 CFR 921.3(a)]. As administered by OCZM, the NESP defined 11 different biogeographic regions based on geographic, hydrographic, and biological characteristics. Sub-categories of this basic system are established as appropriate to distinguish different subclasses of each biogeographic region.

### 3. Existing Estuarine Sanctuaries

Since 1974, the Office of Ocean and Coastal Resource Management or OCRM (formerly the Office of Coastal Zone Management) has awarded grants to establish fifteen National Estuarine Sanctuaries. These include (in order of acceptance by NOAA):

<u>Sanctuary</u>	<u>Biogeographic Classification</u>
South Slough Coos Bay, Oregon	Columbian/Middle Pacific
Sapelo Island McIntosh County, Georgia	Carolinian/South Atlantic
Waialeale Valley Island of Hawaii, Hawaii	Insular/Hawaiian Islands



Rookery Bay Collier County, Florida	West Indian/West Florida
Old Woman Creek Erie County, Ohio	Great Lakes/Eastern Lakes
Apalachicola River/Bay Franklin County, Florida	Louisianian/Panhandle Coast
Elkhorn Slough Monterey County, California	Californian/Central California
Padilla Bay Skagit County, Washington	Columbian/Washington Coast
Narragansett Bay Newport County, Rhode Island	Virginian/Southern New England
Chesapeake Bay (2 components) Maryland	Virginian/Chesapeake Bay
Jobos Bay Puerto Rico	West Indian/Carribean
Tijuana River San Diego County, California	Californian/Southern California
North Carolina National Estuarine Sanctuary (3 components) North Carolina	Virginian/Middle Atlantic Carolinian/North Carolinas (see Table 1)
Wells Sanctuary York County, Maine	Acadian/Southern Gulf at Maine
Hudson River (4 components) New York	Virginian/Southern New England

The Masonboro Island Component, if established, would represent a different typology (see Table 1) within the Carolinian/North Carolina's biogeographic region. This biogeographic region includes over 300 miles of Atlantic coastline extending from Cape Hatteras, North Carolina to the Santee River in South Carolina.

#### B. The North Carolina National Estuarine Sanctuary

##### 1. Background

The State of North Carolina is committed to maintaining the resource productivity of its coastal zone. The Coastal Area Management Act (CAMA) (GS 113A-100 et seq.) was passed by the state legislature in 1974. This act provides for regulation of development in fragile coastal habitats known as Areas of Environmental Concern (AEC), of these intertidal marshes and estuaries are given high priority. The estuaries of North Carolina support a valuable fishery resource and are a biological and aesthetic treasure used and enjoyed by millions of



Table 1. Biogeographic Classification\* and Typology\* for  
Proposed (1) and Acquired (2) North Carolina  
National Estuarine Sanctuary Components;  
Unique Features of Masonboro Island

	Masonboro Island (1)	Zeke's Island (2)	Rachel Carson (2)	Currituck Banks (2)
<b>BIOGEOGRAPHY</b>				
Region/Subregion	Carolinian N. Carolinas	Carolinian N. Carolinas	Carolinian N. Carolinas	Virginian Middle Atlantic
<b>TYPOLOGY</b>				
Ecosystem Types				
Maritime Forest	+	-	-	+
Coastal Shrublands	+	+	+	+
Coastal Grasslands	+	+	+	+
Coastal Marshes	+	+	+	+
Intertidal Beaches	+	+	+	+
Intertidal Mud and Sand Flats	+	+	+	+
Subtidal Softbottoms	+	+	+	+
Subtidal Grassbeds	+	-	+	+
Physical Characteristics				
Basin Type	exposed coast shelt. coast embayment	exposed coast shelt. coast lagoon/t. rv.	shelt. coast tidal river	exposed coast shelt. coast embayment
Basin Structure	bar-bound	bar-bound c. p. estuary	coastal plain estuary	bar-bound
Inlet Type	permanent	temporary	permanent	temporary
Bottom Type	sand	sand	sand	sand
Circulation	non-stratified	non-stratified	non-stratified	non-stratified
Tides	semi-diurnal	semi-diurnal	semi-diurnal	wind-influenced
Freshwater	surface/grd. water	surface/grd. water	surface/grd. water	surface/grd. water
Chemistry				
Salinity	pos. estuary	pos. estuary	pos. estuary	pos. estuary
Salinity Zone	euhaline to polyhaline	euhaline	euhaline	mixohaline/ oligohaline
pH regime	circumneutral	circumneutral	circumneutral	alkaline

\* = present      \* - according to the revised regulations for the National Estuarine  
- = absent      Sanctuary Program - August, 1983 (see Appendix 2)

Unique Features of Masonboro Island in Comparison to the Other Components:

1. Masonboro Island encompasses an entire, undisturbed barrier island/estuarine complex—microtidal transgressive barrier island with a non-drowned river mouth (embayment) estuary.
2. Masonboro Island has a higher salinity regime and different biota in contrast to the embayment associated with Currituck Banks.
3. Masonboro Sound contains a very diverse polychaete fauna and range extensions of several tunicate species (see invertebrate discussion under Natural Environment/Biology and Appendix 8).



people. In order to protect and manage effectively the diversity of North Carolina's estuaries, an understanding of the estuarine ecology of representative sites is essential. For this reason, establishment of an estuarine sanctuary system in North Carolina provides a valuable tool for enhancing the management of the state's estuaries.

a. Goals and Objectives

The North Carolina National Estuarine Sanctuary (NCNES) creates a set of natural field laboratories in which to study the natural and human processes occurring within estuarine ecosystems. The NCNES will be managed to meet the following goals:

1. To preserve estuarine ecosystems representative of the biogeographic regions and typologies in North Carolina and to make them available for continuous future study of processes, functions, and influences which shape and sustain the estuarine ecosystems;
2. To provide new information on estuarine ecosystem processes to decisionmakers as a basis for the promotion of sound management of coastal resources;
3. To provide a focal point for educational activities that increase the public awareness and understanding of estuarine ecosystems, effects of man on them, and the importance of the estuarine system to the state and the nations; and
4. To accommodate traditional recreational activities, commercial fishing, and other uses of the sanctuary system as long as they do not disturb the sanctuary environment and are compatible with the research and educational activities taking place there.

The NCNES has the following objectives to meet the research goals (1 and 2) listed above:

- establish priorities and operational procedures for the different types of research to be carried out in the sanctuary system;
- establish procedures for permitting and monitoring research activities; and
- establish procedures for disseminating research results.

The educational goal (3) has the following objectives:

- establish procedures for developing and supporting educational programs at each site;
- establish procedures for coordinating educational activities; and
- establish procedures for transferring scientific information generated from the sanctuary research program into non-technical terms.



The traditional uses and special concerns goal (4) are addressed by these objectives:

- define standards for recreational activities on the lands and waters of the sanctuary system;
- define standards for the use of off-road vehicles within the sanctuary system;
- establish guidelines for commercial fishing operations within the sanctuary system;
- define guidelines for the disposal of dredge spoil within the sanctuary system; and
- develop criteria for managing the Rachel Carson site's feral horse population.

#### b. Site Selection Criteria

Congress established the NESP in response to disturbing trends appearing in coastal areas throughout the country -- namely, the pollution of coastal waters, the closing of shellfish beds, the draining of marshes, and other man-induced damages to valuable and productive estuarine ecosystems. Fewer and fewer undisturbed or unpolluted estuarine areas remain for scientific study and public education. At the same time, the need is growing for more and more information about the functions and processes of estuarine ecosystems, and man's effect on them, to improve the management of development in the nation's coastal areas.

In response to the same trends and concerns, the State of North Carolina has for several years been actively considering the establishment of estuarine sanctuaries in general and the preservation of specific sites as unique natural areas. The NESP helped bring the state's sanctuary plans to fruition.

The State of North Carolina's involvement in the NESP has spanned approximately four years. Because of the diversity of North Carolina's estuarine biogeography and typology, a multiple site system was essential for adequate representation.

A site selection process was initiated by North Carolina's Department of Natural Resources and Community Development (DNRCD) in early 1980 to determine the most representative areas in the state appropriate for inclusion in the sanctuary system (see Appendix 4). Detailed inventories of over 112 important natural areas were reviewed and a solicitation of nominations for potential sites was sent to over fifty (50) key parties (state and federal agencies, researchers, interest groups, and interested citizens) in June 1980. Personnel from the OCZM (now OCRM) and DNRCD visited and evaluated potential sites along the coast in mid-1980.

Because most of the twenty-eight sites nominated are viable candidates for sanctuary status from a physical/biological standpoint,



the Office of Coastal Management (OCM) sought to incorporate various practical considerations into the selection process. Such additional site selection criteria include: 1.) development pressure, 2.) estuarine research/educational interest, 3.) availability of lands that would constitute a natural, yet manageable estuarine unit, 4.) local interest in estuarine preservation, 5.) accessibility, 6.) lack of on-site disturbance, and 7.) compatibility of adjacent land uses.

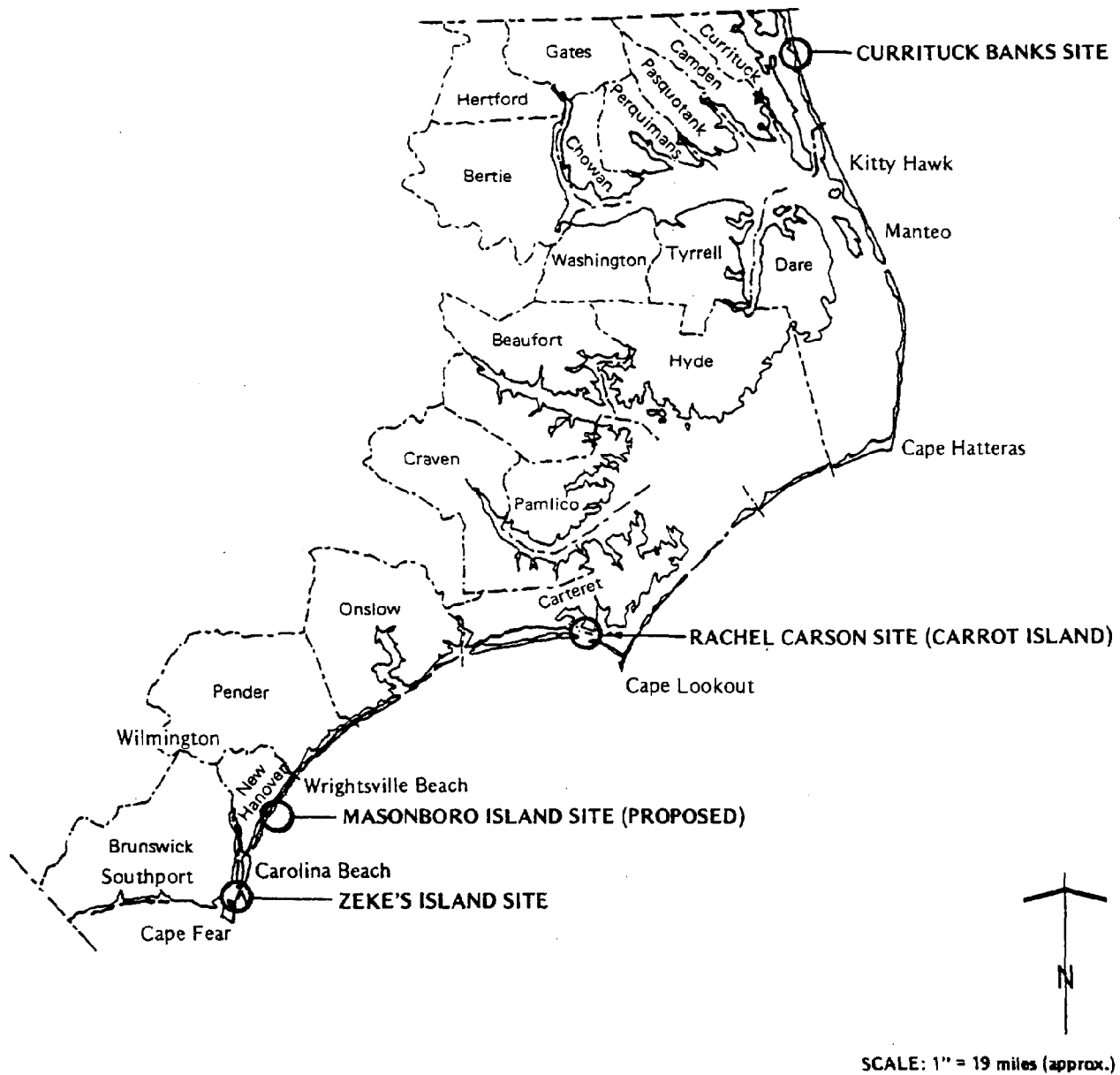
After careful analysis OCM staff determined that the estuaries associated with the state's barrier islands deserved initial priority consideration because of the greater development pressure on the islands than on the mainland. Several such estuarine areas that were available for acquisition were also known to be highly desirable sites for research by local universities or colleges. Similarly, public sentiment favored preservation of these sites for education and traditional hunting and fishing. By combining all of these factors with the physical/biological variations of the state's estuaries, the OCM selected four sites--Zeke's Island, Carrot Island-Bird Shoal (now called Rachel Carson), Currituck Banks, and Masonboro Island (see Figure 1). Each of these selections represents a distinctly different estuarine typology or biogeographic region (see Table 1) according to the revised regulations.

The first three sites recommended by the OCM have been accepted by the OCRM as components of the NCNES. Masonboro Island would complete barrier island estuary representation in the NCNES because the island encompasses an excellent example of a polyhaline to euhaline, embayment basin type with bar-bound structure in the Carolinian Region.

Masonboro Island represents a pristine, non-drowned river mouth estuary associated with an entire, undisturbed barrier island. None of the sites presently within the NCNES nor the other sites nominated encompass such a large, entire, and undisturbed barrier island estuary. This site received priority consideration because of the extensive barrier island development occurring elsewhere along the North Carolina coast and within the Carolinian biogeographic region. Masonboro Island serves as an important "control" estuary which can be compared to inhabited barrier islands relative to the environmental impacts of development. Such intensive development is not presently occurring along the mainland estuaries. In addition, the Masonboro Island area contains a number of distinctive natural features: an extremely diverse polychaete fauna, nesting loggerhead sea turtles, colonial nesting waterbirds, distinctive tunicate species, eel grass beds at the southern-most location in the state, and the plant and animal communities and physical features associated with an entire, undisturbed, microtidal, transgressive barrier island.

Masonboro Island is used in various programs which conform to the goals and objectives previously stated for the national and state sanctuary programs. The University of North Carolina at Wilmington (UNC-W), a school with a strong marine science faculty, utilizes the site for research and education. The Marine Resources Center (MRC) at Fort Fisher, the New Hanover County Public School System, and several private groups use the island for educational activities. In addition, support





**FIGURE 1: COMPONENTS OF THE NORTH CAROLINA  
NATIONAL ESTUARINE SANCTUARY**



for preservation of the island has also been expressed by landowners, the New Hanover County Commissioners, the town councils of adjacent Wrightsville Beach and Carolina Beach, and numerous private citizens. For these reasons, the OCM proposes that Masonboro Island be the next component included in the NCNES.

## 2. Management Plan

In June 1982, after several years of state and local efforts to establish estuarine sanctuaries along the coast, the NCNES became a reality. The approved final draft management plan describes the three sites within the system and how they are to be used and maintained.

The Office of Coastal Management (OCM) within the DNRCD has lead management responsibility for the NCNES, including the development of the approved management plan, liaison with affected state agencies, and grant administration and coordination of acquisition. The sites are managed as a whole, though each component has its own character and its own needs. This requires an individual approach for managing each site to protect its valuable and unique resources for future generations.

The management plan defines how the goals previously listed in Part I, Section B-1-a will be met. Developing a plan such as this is a means by which objectives and policies are formulated and an optimum "image" of the sanctuary is portrayed. In this manner, the research and educational programs are properly directed, achievements can be measured, and the protection of the system's resources is assured. The plan also provides guidance for the day-to-day operation of the sanctuary.

The policies for the protection and use of the NCNES resources are summarized as follows:

Research Activities. The management plan establishes procedures by which research will be permitted in the sanctuary. Though a very wide range of research can take place, priorities are given for projects depending upon the amount and type of previous work done within a given component. Priority research topics include:

- (1) Baseline measurements of chemical, physical, biological, and ecological characteristics;
- (2) Monitoring changes in these characteristics over various time frames; and
- (3) Research to help improve coastal decisionmaking.

This sequence of research priorities is in the best interest of the Sanctuary--protecting it from adverse impacts and guaranteeing its long-term value and suitability for research, education, and other compatible human activities. The ultimate goal of the research program is the third priority--to provide information to improve coastal decisionmaking.



The management plan also provides procedures for permitting and monitoring research activities and procedures for disseminating research results to educate scientists, coastal resource managers, and the general public. Research in the Sanctuary will enhance their awareness and understanding of natural processes in the coastal region and human effects on the estuarine ecosystem.

Educational Activities. Publications, lectures, slide shows, field trips, and other related programs will actively draw on and be coordinated with the activities of the public schools, the MRC's, colleges and universities, museums, and other educational organizations. Policies related to on-site interpretive programs for students and other groups have been developed. A visitor orientation packet will also be developed to provide individuals that enter one of the sanctuary components with a self-guided tour. The on-site educational programs will not disturb research activities. Off-site educational programs will be coordinated with various marine science programs such as the University of North Carolina Sea Grant College Program.

Other Uses. Policies addressing traditional uses of the components have been presented to maintain a harmonious balance between them and research and educational activities. Standards for recreational activities and the use of off-road vehicles have been defined. Guidelines for commercial fishing operations, traditional hunting and fishing, the disposal of dredge spoil, and vehicular access have been developed. Criteria for managing feral horses and developing a small day-use recreation area are presented. The policies are designed to ensure minimal disruption to research projects and to the sanctuary's plants, animals, and habitats.

The Final Draft Management Plan for the NCNES is available to the public through the OCM.

### 3. The Component Elements of the NCNES

On behalf of the State of North Carolina, DNRCD/OCM submitted a \$454,100 grant application to the NOAA/OCRM in June, 1982 for establishment of the NCNES. This initial amount was approved for land acquisition of Zeke's Island and Rachel Carson, and was matched by land donations and bargain sales of these sites to the state. Subsequent award amendments (\$61,263 - June 1983; \$1,251,737 - July 1983) for operating expenses (eg., establishment of Estuarine Sanctuary Coordinator and Sanctuary Analyst positions) and acquisition of Currituck Banks have been matched by previous land donations and bargain sales to the state. Since the initial award, Zeke's Island and Currituck Banks have been acquired, Rachel Carson acquisition is lacking only one small tract currently under negotiation. Draft and final draft management plans for the three components have been completed.

#### a. Zeke's Island

The Zeke's Island component (see Figure 2) consists of approximately 466 hectares (1,650 acres) of islands, marsh, tidal flats, New Inlet, and shallow estuarine waters located about six miles north of Cape Fear



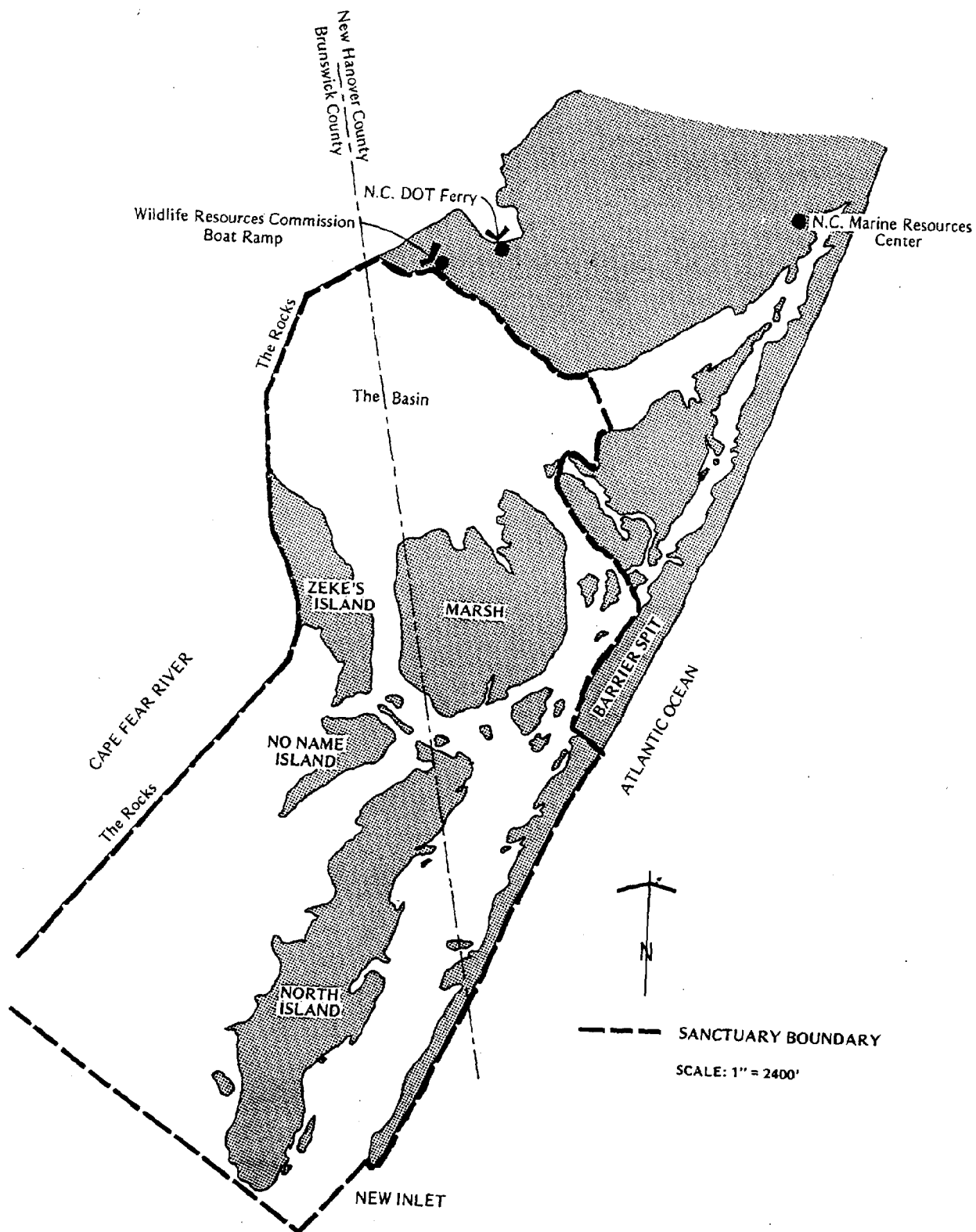


FIGURE 2: PHYSIOGRAPHIC FEATURES OF THE ZEKE'S ISLAND SITE



at the southern end of Federal Point. "The Rocks", a jetty built by the Corps of Engineers in the late 1800s, forms the site's western boundary and has virtually eliminated the Cape Fear River's influence over the site's characteristics. The site's physical processes are dominated by New Inlet which allows the mixing of ocean tides with sound waters behind a barrier spit that has been migrating south over the past 50 years. This creates an excellent opportunity for studying the effects of inlet dynamics on estuarine systems. At the same time, the marshes and flats of the site are rich and expansive. Because "The Rocks" keep the Cape Fear River from flushing through New Inlet, the Zeke's Island site provides a laboratory for observing the slow sedimentation of an estuarine basin and the ecological succession of flats, marshes, and uplands. The site also contains a number of shipwrecks from the Civil War era. Immediately north of the site is Federal Point, which is occupied by a number of state-operated educational and research institutions that will facilitate public education on this site: the MRC/Fort Fisher, Fort Fisher State Historic Site, the Department of Cultural Resources' Underwater Archaeology Laboratory, and Carolina Beach State Park. Other nearby institutions include the University of North Carolina at Wilmington (UNC-W) and the Carolina Power and Light Company's Brunswick Biological Laboratory (CP&L) (in Southport).

#### b. Rachel Carson

The Rachel Carson (Carrot Island) component (see Figure 3) lies inside Beaufort Inlet and Shackleford Banks, across Taylor's Creek from the historic town of Beaufort. The site occupies about 810 hectares (2,025 acres) of islands, marshes, vast intertidal flats, tidal creeks, and shallow estuarine waters. The site supports a locally high concentration of flora and fauna, including a population of feral horses. One hundred sixty-one species of birds and 47 species of invertebrates have been observed at the site. The diversity of its bird and plant populations caused The Nature Conservancy to purchase part of the site (Carrot Island) in the late 1970s. One cause of this diversity has been the periodic deposition of dredge spoil from nearby navigation channels on certain upland areas of Carrot Island and Town Marsh. The Rachel Carson site provides an excellent laboratory for the study of habitat succession, bird and invertebrate populations, feral horses, and other aspects of the estuarine system. The site has long been used for estuarine research due to its proximity to the Duke University Marine Lab and the National Marine Fisheries Services (NMFS) - Beaufort Lab (both on Piver's Island, immediately across a narrow channel from the site) as well as the University of North Carolina Institute of Marine Sciences and the N.C. Division of Marine Fisheries Lab (both in Morehead City). Other nearby research and educational institutions include the Hampton Mariner's Museum (in Beaufort), Carteret Technical Institute (in Morehead City), and the N.C. Marine Resources Center/Bogue Banks (in Pine Knoll Shores).

#### c. Currituck Banks

The Currituck Banks (see Figure 4) component covers approximately 1,122.8 hectares (2,807 acres) of beach, dunes, maritime forest, marshes, islands, and a portion of Currituck Sound. It lies in the



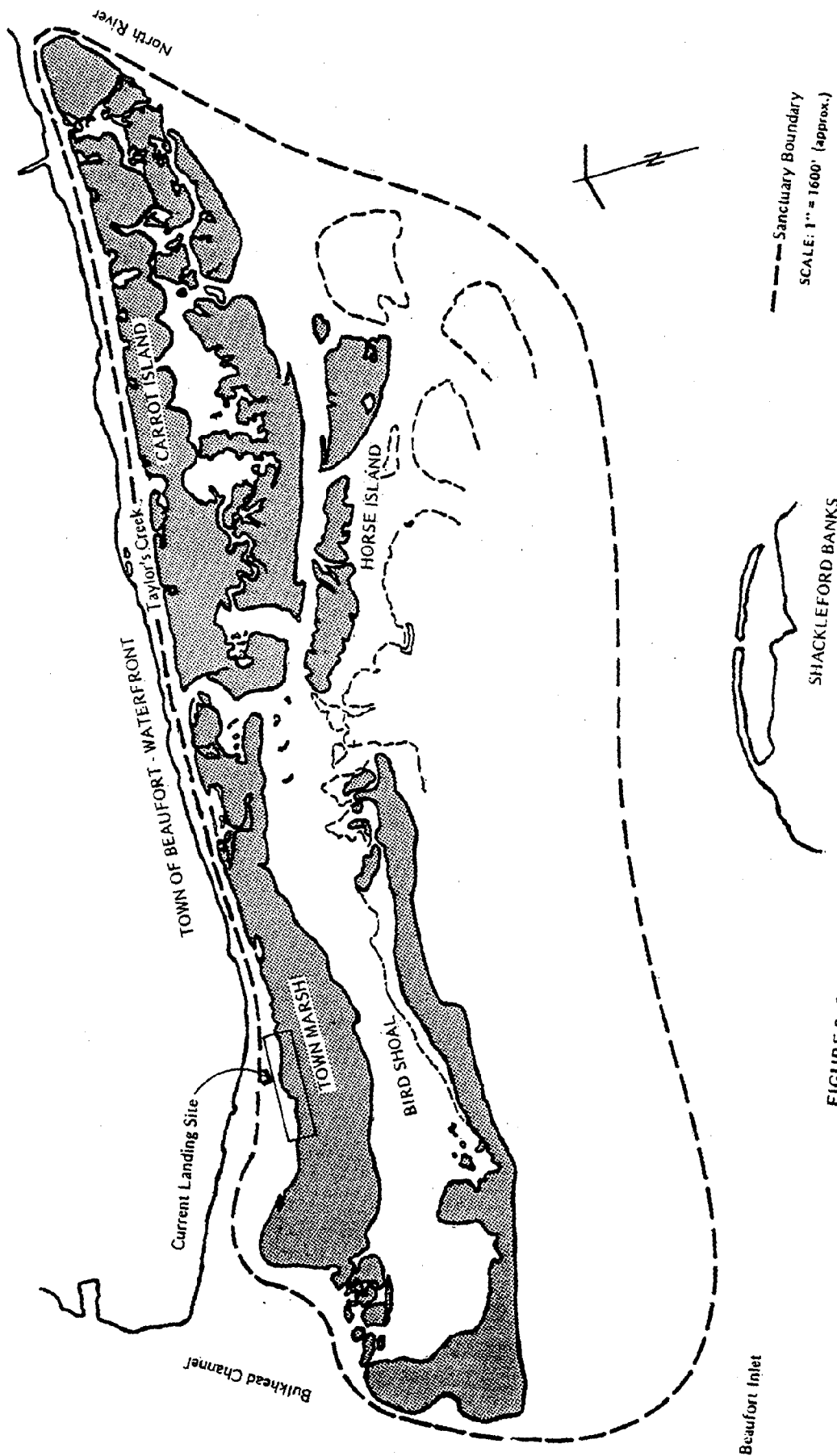


FIGURE 3: PHYSIOGRAPHIC FEATURES OF THE RACHEL CARSON SITE



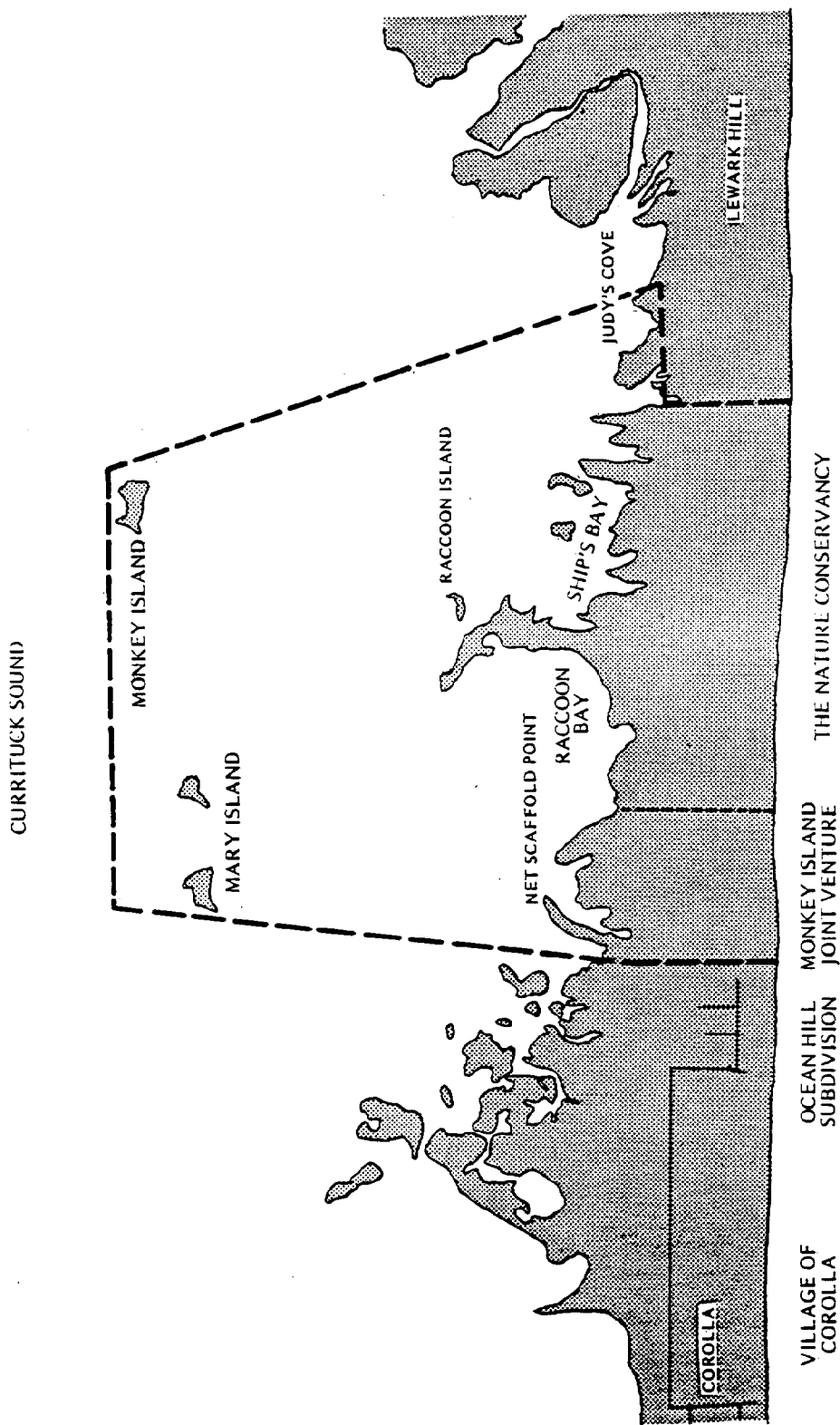


FIGURE 4 : PHYSICAL RESOURCES, CURRITUCK BANKS COMPONENT  
N.C. NATIONAL ESTUARINE SANCTUARY



northeastern corner of the state and is the only site in the North Carolina system that falls into the Virginian biogeographic classification, Middle Atlantic subregion. It exhibits a marked diversity of plant and animal life. Northern and southern estuarine species are found side-by-side and in abundance. Since Currituck Sound is about 30 miles from the nearest ocean inlet, it has a lower salinity than the other sites and thus a different vegetative regime supporting grasses and shrubs found in both estuarine and palustrine wetlands. This variety and richness of vegetation make Currituck Sound and the wetlands surrounding it one of the best feeding grounds in the Atlantic Flyway for migratory waterfowl. Despite its current low salinity, Currituck Sound periodically receives doses of ocean salts by storm waters washing over the banks. Currituck Sound was directly connected to the ocean by an inlet until the early 1800s; this inlet could reopen naturally in the future. Nearby research and educational institutions that will be recruited to use the site include the N.C. Marine Resources Center/Roanoke Island, East Carolina University's Institute for Coastal and Marine Resources (in Greenville), College of the Albemarle and Elizabeth City State University (both in Elizabeth City), Old Dominion University (in Norfolk, Virginia), and the Virginia Institute of Marine Sciences (in Gloucester Point, Virginia).

#### C. The Proposed Masonboro Island Addition

The State of North Carolina has requested a land acquisition grant from NOAA for the establishment of Masonboro Island as the fourth component of the NCNES. This figure represents the remaining amount available to the State of North Carolina from the \$3,000,000 maximum per sanctuary for acquisition. This amount would be matched by an equivalent amount of state funds, available from previous land donations and bargain sales, and services used for the establishment of a 2,000-hectare (5,000-acre) component of the NCNES.

Of the Masonboro Island acreage, 181 hectares (452 acres) are natural uplands (dunes, maritime forest, and shrub thicket), 66 hectares (166 acres) are derived uplands consisting of spoil sites, while the remaining 1,771 hectares (4,428 acres) are intertidal marsh/subtidal estuary held in trust by the State of North Carolina. Acquisition will therefore focus on the 247 hectares (618 acres) above mean high tide. Of this upland acreage, approximately 35.6 hectares (89 acres) are owned by the State of North Carolina and administered by DNRCD/Division of Parks and Recreation as a natural area. Approximately 6 hectares (15 acres) is owned by New Hanover County. It has been resolved by the county commissioners that this acreage will be donated to the state should Masonboro Island be accepted as the fourth component of the NCNES. The United States Government (U.S. Army Corps of Engineers (COE)) owns the northernmost 4.9 hectares (12.2 acres) of uplands for the maintenance of a rock jetty constructed in 1977-80 along the south side of Masonboro Inlet. The COE also has an easement over the spoil areas along the Atlantic Intracoastal Waterway (AIWW). The remaining natural upland area (134.7 ha./337 ac.) is divided among 81 privately owned tracts.

Anticipated development for estuarine sanctuary component purposes will consist of a boat dock, boardwalk, and interpretive trail. Primary



emphasis will be placed upon the development of a coordinated program of research and education that would not be realized otherwise.

#### 1. Purpose of the Addition

The NESP has recognized the dynamic and fragile character of estuaries and has endeavored to protect sites representative of the various biogeographic regions and typologies found throughout the nation. Presently, fifteen sanctuaries, three containing more than one component, are in the Program. Among these sanctuaries is the three-component NCNES.

Within the DNRCD, the OCM has been designated as the lead agency for the NCNES Sanctuary Program. The State of North Carolina has acquired title to sites within the sanctuary primarily for research, education, and traditional uses. The sanctuary program thus protects estuarine and associated upland habitats and biota from the impacts of potential development. However, Masonboro Island represents an estuarine type not presently represented within the sanctuaries in the Carolinian biogeographic region.

Masonboro Island is an excellent example of a non-drowned river mouth estuary associated with an undisturbed barrier island. The estuaries associated with barrier islands are among the most productive ecosystems known to man. They provide nesting and feeding grounds for numerous bird and animal species in addition to being important nursery and spawning areas for finfish and shellfish.

This Final Environmental Impact Statement and Draft Management Plan (FEIS/DMP) presents the alternative actions which could be taken to preserve Masonboro Island as a component of the NCNES. This embayment/bar-bound estuary serves as an unspoiled example of an estuarine type which is under intense direct or indirect development pressure elsewhere within the Carolinian biogeographic region. The island provides habitats for endangered species such as the brown pelican and peregrine falcon and threatened species such as the loggerhead sea turtle. The area is also located along the Atlantic Flyway. Other species of special interest, including terrestrial mammals, colonial nesting waterbirds, ipswich sparrow, osprey, numerous polychaetes, tunicates, mollusks, and other invertebrates, add to the genetic diversity of the site. Loss of Masonboro Island to private development would not only be detrimental to the above species, but would negatively impact a pristine barrier island/estuarine complex that could serve as a natural laboratory and important "control" for comparison to similar but developed estuarine areas.

#### 2. Need for Action

The barrier islands and associated estuaries of southeastern North Carolina have been under development pressure for decades, with a rapid acceleration in oceanfront construction following the last major hurricanes of the 1950's. Even on the very few undeveloped islands, of which Masonboro is the best example in this area, there has been a



speculative wave of purchasing relatively inexpensive oceanfront lots by private individuals.

Now that development is nearly continuous on the barrier islands having the best topographies for permanent structures, developers are looking toward the remaining low-lying islands for second home or private beach club use. Masonboro Island is currently zoned R-20, low-density residential, which could allow for some development-particularly on the north end of the island. However, the entire island is within the Undeveloped Barrier Island System under the Federal Coastal Barrier Resources Act of 1982 (16 USC 3501). Federal financial assistance for public improvements for development (roads, sewers, water facilities, etc.) in this area will therefore not be available. The act also provides that federal flood insurance will not be available in the area for structures built after October 1, 1983. Nevertheless, one local developer has recently voiced plans of constructing a private club house on a portion of the north end of the site.

Over the years, there has been considerable state and local support to preserve Masonboro Island. However, lack of funds has been the primary reason why the island has not been acquired as a natural area.

The need to initiate protective action for the Masonboro Island complex while the site still retains its undisturbed character has been considered in the priorities for the development of the NCNES. This FEIS/DMP presents the Preferred Alternative as the solution to this preservation need.

### 3. Benefits of Inclusion in the North Carolina National Estuarine Sanctuary

North Carolina's proposed addition follows many years of interest in and desire to preserve Masonboro Island by state and local officials, and university and conservation groups. A local group, the Society for Masonboro Island, has been organized as a local effort to preserve the island. A number of articles have appeared in the Wilmington Morning Star concerning the need to save Masonboro Island from development. A public interest group, the Society for Masonboro Island, held a public meeting in Wilmington on October 26, 1983, that was widely publicized in the local news media. The OCM staff was invited to that meeting to explain the NCNES program and the state's intentions relative to acquisition and protection of the area.

Approval of this grant application would permit the establishment of an estuarine sanctuary component representing an embayment/bar-bound estuary within the Carolinian/North Carolinas biogeographic region. The proposed sanctuary component would be used primarily for research and educational purposes, especially to provide information useful for coastal zone management decision-making. Multiple use would be encouraged to the extent that it is compatible with the proposed component's research and educational programs.



The overall and major benefits of designation of the proposed Masonboro Island Component will be development of a better scientific and public understanding of the estuary and its resources. The proposed sanctuary component does not conflict with existing commercial or recreational uses of the Masonboro Island vicinity and any conflicts that arise in the future can be reduced through negotiation. Without this sanctuary component, Masonboro Island would not be dedicated specifically and permanently for research and education. However, with a sanctuary component, present uses of the site, including surf fishing, hunting, and other recreational uses where currently allowed, would continue where compatible with research and educational programs.

#### COORDINATED MANAGEMENT

The DNRCD/OCM will administer the proposed component and will be directly responsible for the content and structure of the site management plan, the expenditure of program funds, and the formulation and implementation of general program elements (such as research and educational programs). A Masonboro Island Local Advisory Committee will be formed and comprised of local, state, county, and private individuals representative of the various administrative, research, educational, and traditional use interests associated with Masonboro Island. The committee will include representatives with the following affiliations: UNC-W, MRC-Fort Fisher, Carolina Beach State Park, COE - Wilmington District, New Hanover County Commissioners, New Hanover County Public Schools, N.C. Division of Marine Fisheries, N.C. Division of Archives and History/Underwater Archaeology Branch, Fort Fisher Management Board, Sierra Club, The Society for Masonboro Island, Lower Cape Fear Bird Club, traditional user(s), and landowner(s). The Estuarine Sanctuary Coordinator will chair this local advisory committee. The committee is advisory to DNRCD/OCM on issues related to the formulation and implementation of the component's management plan, the expenditure of program funds, and formulation and implementation of general program elements.

A memorandum of understanding, to be signed by the appropriate agencies--N.C. Division of Parks and Recreation, MRC-Fort Fisher, N.C. Division of Marine Fisheries, COE - Wilmington District, and UNC-W would be developed to outline interagency agreements for the administration and management of the component, and would express the agencies' agreement to carry out the management plan.

#### RESEARCH

Estuarine component research problems would initially emphasize baseline measurements of the site's chemical, physical, biological, and ecological characteristics. Subsequent studies would monitor changes in the above processes and focus on impacts of human activities. The ultimate goal is to have ongoing research that provides information on estuarine ecosystems that will improve coastal resource management decisionmaking in North Carolina and the nation. Little is known of the estuaries associated with the southeastern North Carolina barrier islands. However, many significant coastal management issues need to be addressed because of increasing developmental pressures in this area.



The establishment of the Masonboro Island Component would help to coordinate and to unify state estuarine research--among the four components as well as other state sites--and to provide information to coastal managers of all levels of government and the private sector with the goal of wise resource management.

#### EDUCATION

The proposed estuarine sanctuary component contains a variety of fauna and flora in a non-drowned river mouth estuarine habitat representative of the southeastern North Carolina barrier islands. The proposed component would provide an opportunity for many to learn more of the estuary's geology, ecology, and resources. Estuarine sanctuary funds would be used to develop exhibit space at the MRC-Fort Fisher; the facility is visited by over 200,000 people per year. The MRC would also be the lead agency, by memorandum of understanding with the OCM, for guided field trips. Sanctuary funds would be used to develop a boat dock, boardwalk, and interpretive trail on Masonboro Island. Off-site educational programs concerning the site will be developed and presented by the Estuarine Sanctuary Coordinator and the Educational Specialist for the University of North Carolina Sea Grant College Program--by memorandum of understanding. Additionally, self-guided trail brochures and educational media available on loan to public groups and schools could be developed.

#### RECREATION

The primary objective of the proposed Masonboro Island Component is to provide long-term protection from developmental disturbances so that the site may be used for scientific and educational purposes. Primary emphasis at the site will be on its use for estuarine studies; however, other existing activities such as hunting, fishing, boating, and wildlife observation will continue, subject to existing state laws.



PART II: ALTERNATIVES CONSIDERED FOR THE  
THE ESTUARINE SANCTUARY COMPONENT  
(INCLUDING PROPOSED ACTION)

The action under consideration by the National Oceanic and Atmospheric Administration (NOAA) is a proposal from the State of North Carolina to establish the Masonboro Island Component of the North Carolina National Estuarine Sanctuary (NCNES).

This part considers five alternatives. The first alternative is the preferred alternative and encompasses the entire island area. The No Action alternative proposes that the island not be acquired as an estuarine sanctuary site. Two alternative boundaries are also considered: I.) inclusion of only the north or south half of the island complex, and II.) the island area west of a line drawn down the north-south axis, thus, excluding the oceanfront from the sanctuary component. An alternative management scheme is also discussed.

The State of North Carolina has applied to NOAA for an acquisition and development grant to be matched by an equivalent amount of previous land donations and bargain sales to the state and in-kind services (e.g., surveys, and appraisals) to establish the Masonboro Island Component of the NCNES. This component is composed of approximately 2,000 hectares (5,000 acres) of water, marshes, and uplands in New Hanover County. Acquisition funds will be spent to acquire property through easements or purchase, as well as for developing limited facilities for research and educational programs at the component.

A. Preferred Alternative for the Masonboro Island Component

The acquisition and development award would be used for acquisition of nearly the entire island complex for the establishment of the Masonboro Island Component. Most of the lands included within the proposed component boundary are intertidal or subtidal and held in trust by the State of North Carolina.

The Masonboro Island estuary on the outer coast of southeastern North Carolina is a long and narrow embayment containing pristine, high quality natural areas and nationally significant biological features. The area includes loggerhead sea turtle nesting areas, brown pelican and osprey feeding areas, eel grass beds at the southern limit of distribution in the state, several tunicate populations which represent significant range extensions from farther south, polychaete species given "special concern" status by state biologists, active waterbird nesting colonies, an undisturbed area along the Atlantic Flyway, and pristine subtidal softbottoms, salt marsh, shrub thicket, maritime forest, grassy flats, dunes, and ocean beach. The proposed site is the largest undeveloped barrier island in southeastern North Carolina and is characterized by unpolluted water and air, moderate to low tidal ranges, large tidal wetlands, a continuous line of dunes, ocean beach, great diversity of fish, wildlife, plants, and no human residents.

The purpose of establishing this proposed sanctuary component is to manage and to maintain Masonboro Island as it is now--a healthy,



productive, unspoiled estuarine and upland natural system. The component will also be managed to encourage research and public education on these waters, wetlands, and associated environments; and to continue traditional uses of the site (including hunting and fishing) when these uses are consistent with the character of the sanctuary as a natural field laboratory.

#### 1. Boundary and Acquisition of Sanctuary Component Lands

The proposed boundary would include approximately 2,000 hectares (5,000 acres) of water, wetlands, and uplands. The boundary of the proposed component is shown in Figure 5. It will be noted that the dredge spoil sites along the AIWW have been included within the sanctuary boundary. This is based upon the anticipated development of a management agreement with the COE with respect to these sites. The state-owned areas on the island are listed in Table 2.

Both the DPR and the COE have stated in writing that the establishment of the proposed component would be compatible with their present land uses. New Hanover County has offered to donate their land to the state should the proposed award be approved.

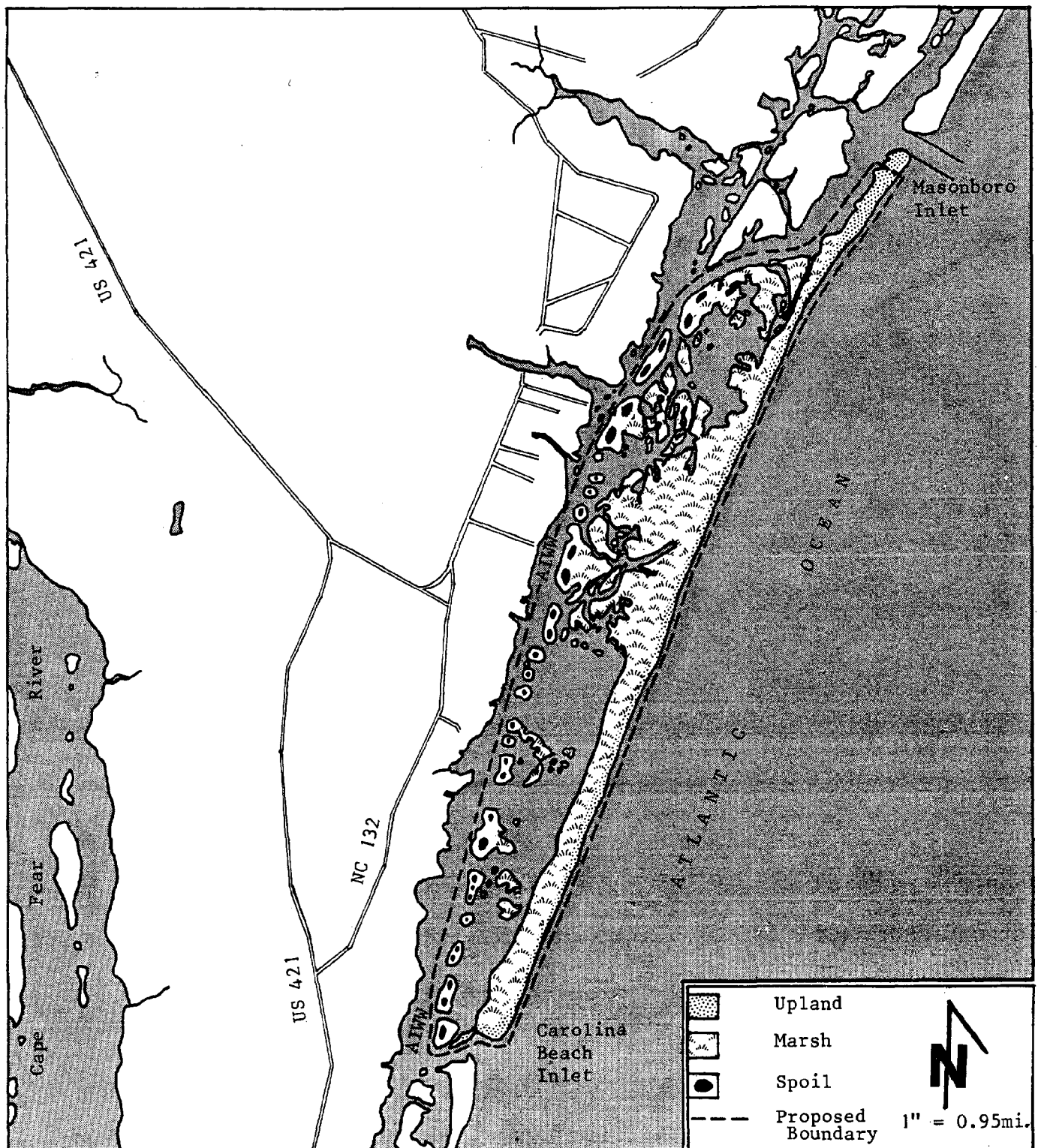
The financial assistance request to NOAA will be matched by the State of North Carolina, using previous land donations from other components in the NCNES and land donations and bargain sales within the proposed component.

Each site in the NCNES contains estuarine waters, submerged lands, marshes, and uplands. Each site is (or was) a combination of privately-owned lands and lands and waters held in the public trust by the State of North Carolina. Under North Carolina common law, the state holds claim to subtidal and intertidal lands in the coastal region, as well as all navigable waters. Acquisition of these lands and waters is not necessary for their inclusion in the NCNES. Lands above the mean high water line are vested in private lands unless they have been duly acquired by a federal, state, or local government agency. These uplands are important components of the estuarine ecosystem; they provide habitat and supply nutrients, sediments, and freshwater flows that contribute to the unique physical processes and biological productivity of the estuary. It is therefore necessary for the State of North Carolina to acquire interests in land above mean high water in order to adequately protect estuarine environment in each sanctuary site.

Acquisitions of private land by the State of North Carolina is intended to be fee simple acquisition and/or, where it is feasible and consistent with sanctuary objectives, acquisition of conservation and use easements. Leases and management agreements may also be considered to ensure the proper management and protection of those areas not immediately acquired. The State will make every effort to acquire the privately owned parcels on a willing seller basis and fair market value will be offered for all land purchases. Land acquisitions will be undertaken as expeditiously as possible. Prior to acquisition, an independent appraisal must be performed in accordance with federal and state appraisal standards and must be approved by NOAA/Office of Ocean



Figure 5. Physiographic Features of the Masonboro Island Site





and Coastal Resource Management (OCRM). The State of North Carolina will actively pursue either full or partial donations of the appraised value of lands at each site; the value of donations will be applied to the state matching share of the total cost of land acquisition for the NCNES.

On Masonboro Island approximately eighty-one parcels of private natural uplands proposed for acquisition are to be acquired as funds permit. Each parcel begins at the mean high tide level on the ocean beach and encompasses a portion of the upland island area. Acquisition of any privately-owned spoil sites is a second priority. Furthermore, cooperative management agreements may be sought with landowners across the inlets and Atlantic Intracoastal Waterway (AIWW) from the island to further protect the proposed component.

The State of North Carolina will make every effort to keep the land owners of Masonboro Island fully informed on the status of the acquisition process.

Table 2. Ownership of Upland Parcels on Masonboro Island and Total Island Area by General Habitat Types

I. Ownership

	<u>Hectares</u>	<u>Acres</u>
United States of America (U.S. Army Corps of Engineers)	4.90	12.25
New Hanover County	6.08	15.20
State of North Carolina (Division of Parks and Recreation)	35.68	89.20
81 privately owned tracts (includes upland areas)	<u>134.67</u>	<u>336.68</u>
<u>Total</u>	181.33	453.33

II. Island Area

<u>Beach Upland</u>	<u>Spoil</u>	<u>Marsh/Estuary</u>	<u>Total</u>
181 ha.	66 ha.	1771 ha.	2018 ha.
453 ac.	166 ac.	4427 ac.	5046 ac.

2. Public and Private Access

Present access to Masonboro Island is by private boat, generally on the sound side of the island adjacent to the most extensive upland area. Land access on the island is totally undeveloped; most visitors normally walk the intertidal sands of the ocean beach.



The only improvements in access the state would make are: (1) a boat dock, (2) a boardwalk over the portion of the intertidal marsh as part of a self-guided interpretive trail, and (3) boat transportation by boat, as part of the educational program of the local Marine Resources Center, to the island.

### 3. Management of the Proposed Component

The National Estuarine Sanctuary Program (NESP) is not a new State or Federal regulatory program. The proposed sanctuary would be managed using existing state laws and programs. The NESP is a Federal program that provides financial assistance for state acquisition, development, and operational management of national estuarine sanctuaries. The principle goals and objectives of the proposed Masonboro Island Component of the NCNES are the same as those presented in Part I, Section B-1-a of this Final Environmental Impact Statement (FEIS) and Draft Management Plan (DMP).

The Masonboro Island Local Advisory Committee will have representatives of local government, user groups, conservation organizations, researchers, educators, and landowners (see Table 3). The purpose of this Committee is to achieve coordination among the public and private groups participating in the management and use of the Masonboro Island Component. The Committee will help in reviewing the proposed component management plan and any changes in the plan, soliciting and channeling public input to the sanctuary planning process, reviewing proposals for use of the sanctuary for educational and research use and other activities within the proposed component, enhancing communication and cooperation among all interests involved in the proposed component, and organizing volunteer efforts in educational and management work. The final composition of the Committee will be selected by the Secretary of DNRC.

Table 3. Masonboro Island Local Advisory Committee  
(Tentative Composition)

University of North Carolina at Wilmington  
Marine Resources Center at Fort Fisher  
Carolina Beach State Park  
COE - Wilmington District  
New Hanover County Commissioners  
New Hanover County Public Schools  
Fort Fisher Management Board  
N.C. Division of Marine Fisheries  
N.C. Wildlife Resources Commission  
N.C. Division of Archives and History/Underwater  
Archaeology Branch  
The Society for Masonboro Island  
Cape Fear Chapter of the Sierra Club  
Lower Cape Fear Bird Club  
Landowner(s)  
Traditional User(s)

#### a. Management Plan



A DMP for the proposed Masonboro Island Component has been drafted in concert with the FEIS. This plan will be reviewed by and revised according to the comments and suggestions of Masonboro Island land-owning agencies and individuals, the Local Advisory Committee, and the public. The plan will be based upon the goals and objectives of the approved management plan covering the existing components. Specific policies will be developed to address the management needs of Masonboro Island, including the incorporation of management prerogatives of the various agencies having management responsibility or legal jurisdiction within the proposed site, while remaining consistent with the goals of the approved plan.

The management plan for the NCNES will be reviewed and updated annually by the OCM staff in consultation with the State Advisory Committee and the Local Advisory Committees. This review will include an on-site inspection of the proposed component, an assessment of research and educational programs, and an assessment of the compatibility (other uses) of the component with the goals of the sanctuary.

The Sanctuary Coordinator will then prepare an annual report that includes a review of management tasks achieved, problems encountered, recommendations, amendments to the management plan (which require NOAA/OCRM approval), scheduled management objectives and tasks for the coming year, a summary of ongoing research and educational activities, and a list of sanctuary-related publications. Other activities occurring within the component will also be summarized; in particular, spoil deposition by the COE on sound-site areas and on the intertidal beach. By February 1 of each year, the annual report will be submitted to the Secretary of Natural Resources and Community Development. Upon acceptance by the Secretary, the Sanctuary Coordinator will forward three copies to NOAA/OCRM and will provide copies to interested parties upon request. Copies will also be sent to the N.C. Marine Resources Centers (MRCs), the Hampton Mariners Museum, the libraries at Duke Marine Lab and the University of North Carolina at Wilmington (UNC-W), and local public libraries near each sanctuary site.

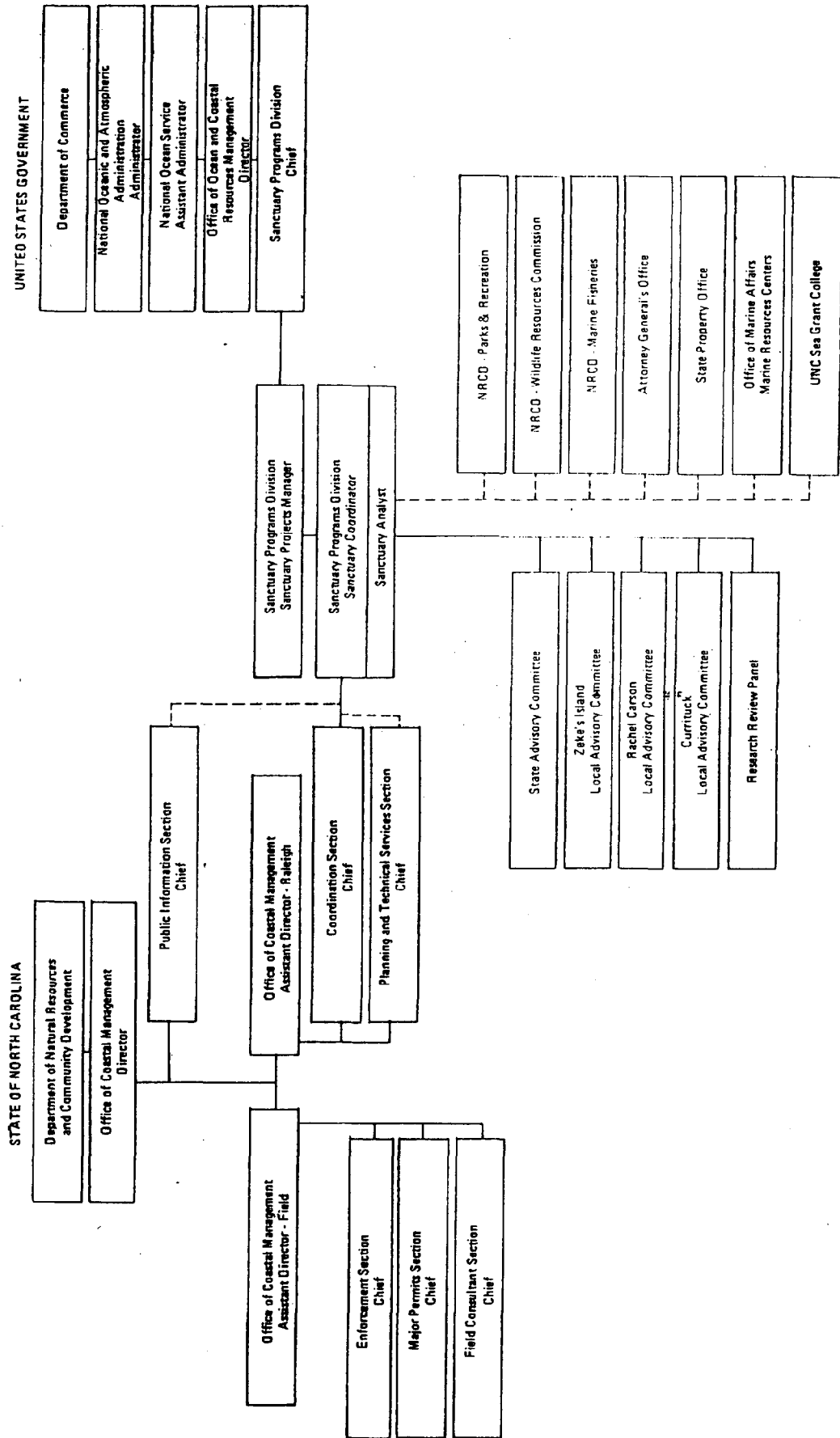
#### b. Management Structure

The OCM will administer the proposed component and will be directly responsible for the content and structure of the component's management plan, the expenditure of program funds, and the formulation and implementation of general program elements such as research programs and educational programs (see Figure 6).

Advisory committees have been created at both the state and local levels to assist the OCM in preparing and implementing the NCNES Management Plan. The Local Advisory Committees provide a unique familiarity with the Sanctuary's individual sites--the resources present there, their problems, and ways of managing them to meet the Program's goals. The State Advisory Committee provides more of an overview perspective regarding the broader directions of the program, the opportunities it presents for research and education, and ways of managing and protecting the Sanctuary's resources.



Figure 6 - MANAGEMENT STRUCTURE - NORTH CAROLINA NATIONAL ESTUARINE SANCTUARY





Consistent with the management of the other three (3) components of the NCNES, a committee will be established by the North Carolina Department of Natural Resources and Community Development (DNRCD) to fully represent all interests in the Masonboro Island area. Individuals representing state and local government, education, research, commercial fishing, wildlife resources, residents, landowners and environmental groups, and other interests will be asked to participate by letter of invitation. The final composition of the committee will be determined by the positive responses received. In the case of interest groups, the invitation will be sent to the executive director so that a representative could be selected.

Once the management plan has been developed and is approved by the NOAA/OCRM, the local committees will meet at least twice a year and the state committee will meet at least annually. The sanctuary staff will maintain continuous and frequent contact with committee members and will make available to them appropriate reports and data pertaining to research programs, educational programs, and the management of sanctuary resources. Meetings of a committee may be called when the coordinator or committee members feel that a management problem has arisen that calls for discussion and action.

c. Sanctuary Staff

The Secretary of the DNRCD has assigned lead management responsibility to the OCM for the NCNES Program financial assistance awards received from the OCRM. The OCM will coordinate land acquisition with the State Property Office and the State Attorney General's Office. Because the management and use of the component will likely involve other state divisions, the OCM will carefully and cooperatively work with all affected agencies. The OCM staff serves as the liaison between federal, state and local agencies and assists all participants in the program to carry out their responsibilities (see Figure 6). The program will be coordinated and administered by a Sanctuary Coordinator in Raleigh whose responsibilities include:

- Act as liaison among participating agencies and all levels of government to initiate cooperation and communication and to ensure a consistent interpretation of sanctuary goals and objectives;
- Carry out duties related to the administration of the sanctuary system, including preparation of required state and Federal grant applications, proposals, budgets, reports, environmental assessments, and maintain records;
- Ensure implementation of all policies set forth in the management plan;
- Coordinate educational and research programs for the sanctuary with participating institutions;
- Hire and train staff to carry out specific duties which may be necessary;



- Oversee the direction of the Local and State Advisory Committees and the Research Review Panel as described below;
- Work with the OCM staff (public information officer and graphic artist) and education coordinators from the Marine Resources Centers to develop literature, displays; and
- Advise and coordinate with universities, units of government, and non-governmental organizations on issues, policies, and projects that affect the sanctuary components.

A Sanctuary Analyst has been hired for the following duties:

- Compile and assemble pertinent technical and educational information concerning all components;
- Assist in preparation of environmental assessments and other documents, and assist in review of research proposals;
- Conduct site visits;
- Assist in the coordination of State and Local Advisory Committee meetings;
- Represent the sanctuary program at public meetings; and
- Interpret and disseminate research results.

Future staffing needs have not yet been identified because of the cooperative nature of the program. At the present time, the Coordinator and Sanctuary Analyst will work with the Technical Services Branch and Public Information Section within the OCM. Educational programs have already been established by University of North Carolina (UNC) Sea Grant, the MRC's, and public schools, and therefore the sanctuary staff will be working within this existing framework.

#### d. Research Policies

To better manage estuarine resources, a better understanding of the complex interrelationships and functions of estuarine ecosystems is necessary. To achieve this better understanding, more research on the natural functions and influences, and effects of human use and abuse, on the system is required. A thorough understanding of the coastal ecosystem will allow more ecologically-sound management decisions to be made, assuring the long-term availability of the sanctuary system for future research, education and enjoyment, and the future productivity of the estuaries of North Carolina and the nation.

The management plan establishes guidelines under which research will be permitted in the component. Nearly all types of research may be conducted, but some will have higher priority for funding or be more actively encouraged than others. This selectivity is for the protection of the long-term usefulness of the component as an undisturbed estuarine research site.



The plan also establishes procedures by which results of research studies will be assembled and disseminated to educate scientists, coastal resource managers, and the public about estuarine ecosystems.

#### I. Research Priorities

Policy: Maintain the long-term integrity of the Masonboro Component as an undisturbed research site. This requirement is of primary importance and will be the basis of all decisionmaking establishing the use of the sanctuary sites.

The goal to protect the sanctuary sites in their present undisturbed states is extremely important. To perpetually support research they must retain their integrity as valid representatives of natural North Carolina estuarine ecosystems.

Policy: Research will be encouraged and funded particularly when it addresses a needed research priority. The order of general research priorities are as follows:

- (1) Baseline measurements of chemical, physical, biological, and ecological characteristics;
- (2) Monitoring changes in these characteristics over various time frames; and
- (3) Research to help improve coastal decisionmaking.

Recently, estuarine scientists have recognized a real need for basic research, the collection of baseline data on the normal state and functions of estuaries. The long-term nature of baseline research, and the use of baseline data as a base for subsequent research on impacts and changes, make an estuarine sanctuary the perfect subject. The sites are undisturbed, represent estuaries of various biogeographic regions and typologies, and will be maintained in a natural state for research use into the future. A sanctuary site could serve as a control for comparison with other estuarine ecosystems, as a model for estuarine processes found in other areas, and as a comparison to itself at a later time or under different conditions. Studying the component's ecological structure and functions can promote sound management decisionmaking for the sanctuary sites themselves as well as other estuarine ecosystems throughout North Carolina and the nation.

The OCM is currently developing base maps with the Land Resources Information Service (LRIS), a computer mapping service. Baseline data will be added to the map data base for such purposes as overlaying different parameter information.

The following, in order of priority, are the types of research which have been established for the NCNES:

1. Baseline measurements of chemical and physical characteristics:



- water chemistry (e.g., salinity, dissolved oxygen, turbidity, nutrients)
  - hydrological (e.g., patterns, velocities and quantities of water flow)
  - sediment characteristics (e.g., grain size, permeability, organic matter content)
2. Baseline measurements of biological/ecological characteristics:
    - physiological ecology (e.g., feeding, oxygen consumption, condition indices)
    - population ecology (e.g., population size, density of individuals, age structure)
    - community ecology (e.g., equilibrium species, qualitative/quantitative structure, trophic structure, larval recruitment, community metabolism)
    - ecosystem ecology (e.g., habitat characterization, different ecosystem/habitat structure and function)
  3. Monitoring changes in the above processes and functions over time (e.g., different seasons, before/after storm events, over a period of years)
  4. Studies of impacts of human activities, including commercial fishing, on component flora, fauna and ecological processes:
    - determination of carrying capacities for various activities within the component
  5. Research that provides the technical basis for improved coastal resource management decisionmaking in North Carolina and the nation
    - impact studies using the component as a control
    - studies to answer specific management problems (e.g., Rachel Carson dredge soil disposal)
  6. Other estuarine research will be funded if it does not conflict with priority research.

All types of research are encouraged within the NCNES; it has been preserved to foster scientific research. However, for the long-term good of the sanctuary system and coastal resource management in general, research applicable to resource management will be favored over other research if conflicts arise in the allocation of study sites.

Policy: Research involving manipulation of the component environment will be permitted on a limited basis for



finite periods, provided that upon completion of research tasks, the study site be restored to its original condition.

Manipulative studies are defined as activities that involve creating physical, biological, geological, or chemical changes in the environment and observing their effects. Such studies have the capacity to alter natural processes and undermine the ability of the proposed Masonboro Island Component to serve as a subject for baseline studies or as a control for comparative studies. Manipulative research will be allowed if it benefits the management of the component and coastal resources. Proposals for manipulative research will be strictly evaluated on a case-by-case basis as to the type, extent, and reversibility of environmental changes, the duration of the project, its impact on the long-term stability of the component environment, and its potential for improving coastal resource management strategies.

Policy: Research involving collection of out-of-season or studies of protected species will be approved contingent upon acquisition of all necessary research permits.

North Carolina's coastal fisheries regulations require a scientific collecting permit from the Director of the DMF for anyone wishing to take any marine or estuarine species which is out of season or otherwise protected. For other wildlife and inland fish species, including endangered or threatened species, a researcher must obtain a scientific collecting permit from the Director of the Wildlife Resources Commission. The U.S. Fish and Wildlife Service (FWS) requires a scientific collecting permit for taking, transporting, or possessing migratory birds or any endangered or threatened species, their parts, nests, or eggs for scientific research or educational purposes (50 CFR 21.23). The National Marine Fisheries Service (NMFS) requires permits for studies related to endangered or threatened marine fishes, sea turtles, and all marine mammals.

## II. Research Coordination

Policy: Proposals for research must be submitted in writing to the Sanctuary Coordinator for approval before initiation of proposed research.

A written technical proposal (see Appendix 3) must be submitted to and approved by the Sanctuary Coordinator in consultation with research review panel. Proposals received by the Sanctuary Coordinator will be screened by the sanctuary staff and peer-reviewed by members of a review panel comprised of technical experts and selected individuals with the appropriate expertise necessary to evaluate the specific proposals. Proposals will be evaluated on the basis of feasibility, scientific and technical merit, and whether or not they meet component objectives, policies as defined in the management plan, and annual research priorities as established by the Estuarine Sanctuary Program. Only research that complies with the management plan and the established research priorities will be permitted. Proposed research will be



reviewed with an eye toward its effects on other ongoing or proposed research projects being conducted with the sanctuary.

Research in the sanctuary can be supported by funds provided by both the State and the Federal Governments. If the research proposals are submitted for Federal-State matching fund support, the proposals, following the review and evaluation by the Sanctuary Coordinator and the peer-reviewers, will be forwarded to the NOAA Sanctuary Programs Division for final review and approval.

Field work may not begin in the component until the principal investigator receives written notification of approval from the Sanctuary Coordinator. Major changes in the original research objectives, materials, or methods must be submitted in writing to the Sanctuary Coordinator who may consult the Research Review Panel. Variations from the original research prospectus will only be allowed following written notification from the coordinator.

Routine wildlife management activities, such as bird banding, fish sampling, and water quality sampling conducted by state or Federal agencies will be coordinated through the Sanctuary Coordinator, but will not require a proposal. The agency must notify the Sanctuary Coordinator either by telephone or in writing and will submit an annual summary of the activity and the results of the studies to the Sanctuary Coordinator for inclusion in the annual report and for review by the State and Local Advisory Committees.

Policy: Research activities must comply with the sanctuary component objectives and policies and with the approved research prospectus unless the research activities meet a special need of the NCNES or NESP.

Research that deviates from the objectives and policies of the management plan will not be allowed to continue. Field work which varies significantly from the approved research prospectus (or approved amendments) may be terminated immediately by the Sanctuary Coordinator.

Policy: The principal investigator for each research project is responsible for maintaining and removing any human-made objects (field equipment, trash, etc.) that they bring into the sanctuary component.

Just as researchers bear sole responsibility for maintaining their field equipment, they also bear sole responsibility for removing it when ending the project.

Policy: The principal investigator for each research project is responsible for the timely submission of technical project reports, project progress reports, and related abstracts to the Sanctuary Coordinator for the program files.

The abstract and copy of the project report or other publication shall be kept with the sanctuary program files along with the research



prospectus and progress report(s). The OCM also plans to develop a computerized bibliography of research conducted at N.C. estuarine sanctuary sites, retrievable by common locations or subjects. The OCM shall place copies of the abstract, prospectus, and project report in the NCNES Depositories at the MRC-Fort Fisher, UNC-W, the Hampton Mariners Museum, the Duke University Lab, College of the Albemarle, and MRC-Roanoke Island.

Policy: Results of all research projects will be included in established estuarine information and exchange program files.

The information generated from research projects is equally important to the NESP. The recent establishment of the Research and Education Information Coordination and Exchange Program (REICEP) by NOAA/OCRM will provide a repository for sanctuary research results. The establishment of the NCNES focuses special attention on the need for long-term protection, wise use and proper management of estuarine areas. Through effective interpretive programs, the sanctuary site environment is made more meaningful. Learning more about estuaries from sanctuary research will improve public understanding of how the system functions and will expand the resource base from which to develop interpretive programs.

#### e. Educational Policies

The establishment of the NCNES focuses special attention on the need for long-term protection, wise use, and proper management of estuarine areas. Through effective interpretive programs, the estuarine environment is made more meaningful. Learning more about estuaries from sanctuary component research will improve public understanding of how the system functions and will expand the resource base from which to develop interpretive programs.

Publications, lectures, slide shows, organized activities and other educational programs will actively draw on and be coordinated with the activities of the public schools, the MRC's, the Sea Grant Program, colleges and universities, museums, and other educational organizations. Policies related to off-site and on-site interpretive programs for students and other groups have been developed. Visitor orientation packets will be developed to provide a self-guided tour for individuals that enter one of the sanctuary sites on their own accord. The on-site educational programs will not disturb research activities conducted throughout the component.

#### I. Educational Programs

Policy: Off-site educational programs will be provided in conjunction with the MRC's, the Sea Grant Program, the public schools, community colleges, and other educational institutions in order to make the public aware of the component and its importance at state and national levels.



The Sanctuary Coordinator will coordinate activities with existing off-site programs of the MRC's, Community College, UNC Sea Grant, and other institutions and will help develop instructional materials, slide shows, and permanent displays. Cooperative educational programs will be developed to incorporate the information generated by sanctuary research into existing school programs. Specialized workshops will be provided for people such as youth group leaders and science teachers to relay this information and other topics related to the sanctuary's resources.

The OCM may sponsor specific meetings and workshops that are announced statewide. The events will be directed at the interested public and will utilize staff, scientists, and volunteer experts. The OCM will also respond to, and encourage, speaking engagements by its sanctuary staff. Audiences may include service organizations, youth groups, schools, conservation clubs, etc. The staff will also participate in activities such as serving on various boards, advisory groups, and public programs.

Policy: On-site programs will be provided in conjunction with existing activities.

"Nature walks" will provide close contact with the physical setting of the component. Tours will be offered to public groups, school groups, and special groups upon request. The MRC already handles a limited number of groups. The Sanctuary Coordinator, working with NRCDD's Office of Legal Affairs, shall determine the extent of liability associated with on-site activities.

Research site tours for college students and other groups are encouraged. It would be appropriate to have one or more of the researchers present during the tour in order to provide the participants with an explanation of equipment design, protocol, and raw data. The Sanctuary Coordinator will coordinate such activities with participating research institutions.

Policy: On-site activities shall stay within the areas of the site designated for public access, and shall not in any way interfere with research projects.

A location map, developed by the sanctuary staff and based upon habitat inventories and aerial surveys, will highlight the public access areas and will indicate research projects within this area, if any exist. The map will be distributed to participating institutions and will be updated according to the research proposals approved by the Sanctuary Coordinator in consultation with the research review panel and NOAA/OCRM. Baseline studies and aerial surveys will be needed to determine the areas best suited for public access. The Education Coordinator associated with the MRC shall also be consulted. Until the map is developed, the Sanctuary Coordinator will work closely with educators to ensure protection of habitat.

Policy: Literature, visual aids, and related materials will be developed, distributed, and routinely updated in order to



convey to the general public and specialized groups the goals, objectives, and accomplishments of the NCNES.

Pamphlets to educate the public about each component could include the following:

- North Carolina National Estuarine Sanctuary -- Reasons for Designation. Some of the questions addressed might include: What is an estuarine sanctuary? What is its purpose? Why is each site special? What activities take place in a sanctuary? Are there special rules of conduct? Are there other estuarine sanctuaries in the U.S.?
- Research Program at the NCNES. Information would include the type of research being conducted, what the studies will indicate, and the values and vulnerabilities of research.
- Geology and Coastal Processes at Masonboro Island. Questions addressed could include: What materials make up the complex? How was it created and when? Were any people around at that time? What types of plants and animals live there? Is the geology static, or are current events changing its appearance? What factors contribute to this change?
- Other Special Topics--such as inlet dynamics, habitats, salt marsh ecology, barrier islands.

The Sanctuary Coordinator and staff will work with science teachers from the public schools and the Education Coordinator from the MRC to develop or update materials for the science curriculum. An educator's packet will be prepared that includes scientific information, rules and regulations, and other pertinent information in order to prepare instructors for interpretive on-site programs. Training activities for educators who are to use the site will be provided and will include on-site workshops as well as off-site presentations. The Education Coordinator will make maximum use of instructional materials already being used. A workbook for use at the middle and secondary levels may be developed to assist children in examining the characteristics of the estuary and to learn something of the importance of estuaries.

Visitor orientation for on-site tours can be accomplished in a number of ways. An orientation packet will be compiled for self-guided tours. Maps, brochures, and related information will be included that will guide the individual through the sanctuary component. A checklist of plant and animal species will be developed on the basis of current research and amateur observations. Rules and regulations will be clearly outlined so that visitors will be familiar with the component's management policies. Signs indicating that the area is a state-owned National Estuarine Sanctuary Component will be placed at popular access points.

A display will be placed at the MRC to indicate the location, size, and habitats of the site. Mobile displays and slide shows will be used throughout the state at conferences, workshops and meetings.



Policy: The OCM will actively encourage the dissemination of scientific information from the sanctuary site to the public.

In addition to the avenues available to the scientific community for presenting new information and data, media coverage, special newspaper articles, and editorials will be used by the staff to disseminate information on the component's research accomplishments and educational programs. An executive summary of the management plan, updated annually, will also be available.

## II. Administration

Policy: The Sanctuary Coordinator will oversee the educational program and will coordinate activities between the participating institutions.

The Sanctuary Coordinator will address the special needs of the program on a case-by-case basis. These needs may include: securing media coverage, acquiring or obtaining equipment, providing staff support and funding, and scheduling events and meetings. Lines of communication will be established through informal conversations, annual meetings, quarterly newsletters, etc. A log book will be developed to document the use of the component.

Policy: A NCNES log book for each site will document educational use. An entry will be made in the Log Book for each educational activity.

Log sheets will be distributed to the participating institutions for use after each site visit and after each off-site program. The sheets will be filed quarterly with the coordinator, who will then enter them into the log book. Each log sheet will include the following information (see Appendix 3):

- name, address, telephone number, and institution of the instruction or tour guide;
- number and age range of participants;
- method of access (private boat, concession, etc.)
- time of arrival and departure;
- curriculum; and
- comments and suggestions.

It would be beneficial to the NCNES Program if participating institutions would provide the Sanctuary Coordinator with approximate levels of public use. This information will be used by the sanctuary staff to report to NOAA on an annual basis the extent of educational programs.



### III. Priorities

The development of off-site educational programs and materials will be the highest priority until interpretive access areas are defined through aerial surveys and habitat mapping. By September 1984, the pamphlet North Carolina National Estuarine Sanctuary -- Reasons for Designation will be developed, along with a general slide show depicting habitats and estuarine resources at each site.

The Sanctuary Coordinator and staff will contact the MRC, public schools, UNC Sea Grant, and other interested educational institutions to begin integrating NESP information into existing curricula. An Educational Program Task Force with representation from all components may be assembled to develop new curricula and to begin utilizing the new information generated from on-site research efforts.

The location map, depicting access-zones and research areas, and a visitor orientation packet will be developed following the completion of aerial surveys and habitat mapping.

#### f. Policies for Traditional Uses and Other Activities

Research and educational programs at the NCNES take place within the context of a number of traditional uses of the different sites. The management plan will recognize the value of these uses and will strive to maintain a harmonious balance between them and research and educational activities.

The lands and waters of Masonboro Island have long been used by area residents and visitors for recreation and for commercial fishing. The sole means of access to the site is by private boat. A number of public and private boat ramps in Carolina Beach and Wrightsville Beach are regularly used for trips to the island. The majority of visitors to Masonboro Island land their crafts on the sandy beaches on the sound sides of the inlets, while commercial and sport fishermen typically enter the extensive shallow sounds. The beach area is fairly popular for many forms of beach recreation, such as surf fishing, shell collecting, sunbathing, and swimming. The site's marshes and tidal flats are visited by bird watchers, clam diggers, and hunters. Off-road vehicles, motorcycles or three-wheel vehicles, rarely use the island because they must be carried from the mainland by boat. The COE reserves the right to dispose of dredge spoil at specific sites in the island complex.

The proposed Masonboro Island component can accommodate all of the concerns described above--recreation, commercial fishing, and spoil disposal. In order for them to take place in harmony with the research and educational uses of the site, however, a series of clear objectives and policies tailored to the component are needed to manage it. Through proper management, these traditional activities can continue within the component and can contribute to its value as a place for learning and enjoyment.

#### I. Recreation



Policy: Traditional recreational uses of each sanctuary site shall be allowed to continue as long as they do not disrupt the natural integrity of the component or any research and education projects.

The Masonboro Island site has long been used by area residents and visitors for swimming, fishing, hunting, bird watching, and shell collecting. This tradition of use has created a strong local pride in and attachment to the natural and aesthetic values of the area. Recreation, research, and education are all compatible uses if they are properly managed. Allowing recreation to continue promotes full use of the component's resources, but research and education programs still take top priority and will be protected from any undue disturbances.

Policy: No user shall disturb research projects or research equipment in place at the component.

Research is the highest-priority use of the sanctuary and must receive absolute protection. Disrupting this research would disrupt the effective long-term management of the sanctuary system and other coastal resources.

Policy: Users of the component shall not disturb or remove any live animals (except for fish, shellfish, game animals, furbearers and waterfowl; see fishing and hunting policies for these) or vegetation at the site unless it is part of an approved research or educational project. All users must pack out their own trash. All pets must be under control at all times.

Removing and destroying vegetation can lead to serious long-term damage to the habitats found in the component by promoting erosion and sedimentation. Disturbing nesting birds and other animals can interfere with their natural habits, possibly cause them to leave the site, and thus diminish the component's diversity of species. Signs will be posted at the site stating these rules. Any interpretive trail eventually established within the component will be compatible with this policy of respecting the integrity of the site.

Policy: Camping and fires in the component must be approved and a permit issued by the Sanctuary Coordinator. Camping and fires will be allowed in designated areas only.

Restricting camping fires protects the component's delicate habitats from disturbance and destruction. Restricting camping and fires to beach areas (where they primarily occur anyway) protects the site's more delicate habitats.

Policy: Hunting may occur in the component in accordance with current local, state, and federal wildlife regulations. More stringent regulations will be pursued if hunting conflicts with research and educational uses or threatens the component's wildlife populations.



Existing N.C. Wildlife Resources Commission and FWS regulations set seasons, bag limits, and restrictions on methods of taking for popular game species found at the sanctuary sites (migratory waterfowl, deer, rabbits, opossums, and other small game). These regulations, properly enforced, are adequate to maintain healthy wildlife populations in the component. If the Sanctuary Coordinator and Local and State Advisory Committees deem more stringent regulations to be necessary, the OCM will petition the Wildlife Resources Commission and the Secretary of Natural Resources and Community Development to proceed with the adoption of more appropriate restrictions.

## II. Off-road Vehicles

Policy: No power-driven vehicles (other than boats and emergency vehicles) shall be used on the Masonboro Island site, unless allowed by permit for limited research use.

Because of the pristine and restricted character of the Masonboro Island uplands, this area is extremely susceptible to vegetational loss and subsequent erosion from vehicular traffic. The documented use of island uplands for nesting by the threatened loggerhead sea turtles and colonial waterbirds also warrants the prohibition of off-road vehicles during the spring, summer, and fall months. Occasionally, certain research activities may require the use of a vehicle. In such situations a special permit will be issued, specifying the type of vehicle and the areas in which it may be used.

## III. Fishing and Hunting

Policy: Fishing, shellfishing, and hunting will be allowed to continue in the traditional manner, but will be regulated by State and local laws and by special regulations. Hydraulic dredging or "clam kicking" is not allowed within the component.

Sport and commercial fishing and hunting will generally be allowed to continue within the component, subject to existing regulations on bag limits, seasons, and gear limitations. Collection of all migratory birds requires a FWS permit and a N.C. Wildlife Resources Commission license. Since the Masonboro Island estuary is a primary nursery area for fish and shellfish species, only hand gear may be used for sport or commercial fishing.

Policy: Certain limited areas of the component may be closed to commercial and recreational fishing and shellfishing to provide undisturbed sites for research and fisheries reproduction.

Once research better documents the component's submerged habitats and the species they support, certain areas may be closed to shellfishing and fishing. Such closings might benefit commercial fisheries by providing excellent nursery areas and spawning areas. Similarly, a researcher might propose a project that called for an undisturbed, submerged habitat to study fish, shellfish, plants, and other ecological



relationships. Authority to close certain areas of the component rests in the DMF, with the Wildlife Resources Commission having regulatory authority for inland waters. When the Sanctuary Coordinator and the Local and State Advisory Committees find such a closing to be warranted, the OCM will petition the appropriate agencies to put such a closing into effect in accordance with existing regulations (for example, N.C. Administrative code, Title 15, Subchapter 3B, Section .0111 -- "Research Sanctuaries").

#### IV. Disposal of Dredge Spoil

Policy: Dredge spoil disposal shall be allowed to continue at the Masonboro Island site, but only on existing disposal areas: 1) on the beach approximately 2,295 m. (3,000 ft.) south of the jetty, 2) on certain spoil areas along the west edge of the island, within the COE AIWW easement and 3) in the surf zone on the south end of the island. All spoil operations must comply with North Carolina's Coastal Area Management Act (G.S. 113A-100) and Dredge and Fill Act (G.S. 113-229) as well as Section 404 of the Federal Water Pollution Control Act (33 USC 1251 et seq.). All dredge spoil disposal will be placed in a manner consistent with the best technology available for the prevention of mosquito and other disease vector breeding.

The COE retains a perpetual easement along the western edge of the island complex for AIWW maintenance dredging spoil deposition. The resultant spoil sites are an inherent element of the Masonboro Island ecosystem.

The periodic deposition of dredge spoil has created uplands on the western edge of the island complex that provide a valuable nesting habitat for many species of birds. This nesting habitat complements adjacent spawning areas (in the marshes) and feeding areas (on the intertidal flats). Periodic spoil deposition keeps vegetation limited to grasses and sparse forbs, which is an ideal nesting habitat for a variety of colonial and solitary birds. Allowing periodic spoiling to continue will maintain this habitat and the diversity and productivity of the Masonboro Island site. Spoil disposal on the north beach and at the south end of the island will not affect the estuary and this spoil will be washed back into the longshore transport system.

However, In order to minimize disruption of the existing ecosystem and protect other habitats in the site, the COE will work with the OCM and NESP to develop a spoil disposal management plan to coordinate the timing and location of spoiling activities. The goal for implementation of this plan is mid-1985. If an agreement is not achieved by mid-1985, the NOAA, COE, and the State will review the appropriateness of the sanctuary boundary as presented in this EIS.

Policy: Spoil disposal sites must be located, designed, and managed to prevent sedimentation of marshes, intertidal flats, and submerged lands.



The spoil disposal easement held by the COE for the AIWW and north end of the island expressly forbids covering any wetland vegetation (as defined by the Coastal Area Management Act). Just as the direct deposition of spoil is allowed only on existing spoil dunes and the intertidal beach to protect other habitats in the Masonboro Island site, the dredge spoil area must be properly designed to prevent the encroachment of sediment into other habitats.

The most threatened habitats are the wetlands, intertidal flats, and submerged bottoms. While a certain degree of natural sedimentation and habitat transition can be expected to occur in the estuarine environment, care must be taken to keep dredge spoil disposal from accelerating these processes.

Policy: The impacts of spoil disposal on the various habitats of the Masonboro Island site will be the subject of periodic monitoring and research to identify any needs for changing spoil management practices.

The periodic deposition of dredge spoil on portions of the Masonboro Island complex has fostered a delicate balance of natural and human processes that supports a rich diversity of habitats, flora, and fauna. Improper management of dredge spoils can easily disrupt this balance and diminish the component's value for research, education, and recreation.

There is a benefit to both the COE, OCM, and NESP from the cooperative study of the effects of spoil deposition in the Masonboro Island Component. Research studies, aerial surveillance, and other periodic observations will provide valuable information on how spoil disposal can be managed best to protect the values of the component. Much of the knowledge gained here may prove applicable to dredge spoiling activities in other areas.

As part of the spoil disposal management plan, the OCM, NESP, and the COE will work together to develop a cooperative spoil research plan. Cooperation will be sought in the timing and placement of spoil, activities of research personnel, and funding. The research plan will establish selected areas within the COE easement for control sites. The COE will provide the OCM and NESP with an annual summary of spoiling activities, future scheduling, and the results of any research and monitoring done.

Policy: Spoil operations that might occur during the critical nesting times (April 15 to November 30) of shorebirds and loggerhead sea turtles shall be restricted. If spoiling is necessary, it shall be contingent upon prior and concurrent monitoring for nesting activity.

The courting and nesting season of shorebirds in the Masonboro Island site extends from the end of April through September. This roughly coincides with the loggerhead sea turtle's nesting season, which extends from mid-April through November. Depositing dredge spoil during these seasons can seriously alter the area's biological diversity by



disrupting nesting patterns. Annual monitoring of shorebird and sea turtle nesting activity shall be a priority research activity (see II-d-2).

g. Policies for Surveillance,  
Enforcement, and Maintenance

Maintenance and protection of the resources of the NCNES are essential to its long-term survival and its value for education and scientific research. Policies stated in previous sections of the management plan control manipulation of habitats by researchers and control other disruptions (habitat disturbance, littering, species removal, etc.) by all users of the component. This section of the plan presents policies for the overall maintenance of the component, for reporting violations of the management plan's policies, and for the enforcement of these policies.

I. Surveillance and Enforcement

Policy: The sanctuary staff and enforcement personnel from other state and local agencies shall periodically visit each sanctuary site to identify and investigate possible violations of sanctuary system policies. The Masonboro Island Component will rely heavily, but not solely, on researchers, educators, and other users of the component to report any violations and to cooperate in any investigations.

Time and budget limitations keep the OCM and state and local enforcement agencies from maintaining a continuous presence at each site in the NCNES. Therefore, all users of the component must exercise responsibility for obeying the management policies stated in this plan, for reporting any violations of the management policies, and for cooperating with the sanctuary staff and state and local enforcement personnel.

Policy: The OCM, local law enforcement agencies, the DMF, the Wildlife Resources Commission, and the DPR shall cooperate in enforcing sanctuary system policies as well as all state and local laws applying to each sanctuary site.

Each site in the NCNES falls into a number of different, and sometimes overlapping, jurisdictions of local and state agencies. Such overlap demands strong lines of communication and a strong sense of cooperation on the part of the enforcement agencies.

At Masonboro Island the DPR (Carolina Beach State Park) has responsibility for enforcement of State Park regulations on their 36 hectares (89 acres) of uplands and associated marsh/estuary. The island falls under the law enforcement jurisdiction of the New Hanover County Sheriff's Department in Wilmington. N.C. Wildlife Resources Commission enforcement officers have authority to patrol the lands and waters of the site to enforce wildlife regulations. The DMF staff has authority



to patrol the waters of each site to enforce marine fisheries regulations.

Policy: The OCM shall enter into cooperative agreements with each law enforcement agency to clarify enforcement jurisdictions and responsibilities.

Each sanctuary site has had some difficulty with response to law enforcement calls due to a lack of clear understanding on the part of law enforcement authorities regarding which agency should respond to what type of call. By clarifying the role of each enforcement agency within each component, cooperative agreements will ensure the coordinated and expedited enforcement of sanctuary policies and state and local laws.

Authority to protect and manage the natural resources of North Carolina are vested in the State by North Carolina General Statutes:

Chapter 113: Conservation and Development  
Dredge and Fill G.S. 113-229  
Wetlands Protection Act G.S. 113-230

Chapter 113A: Pollution Control and Environment  
Environmental Policy Act G.S. 113A-1  
Sedimentation Pollution Control Act of 1973  
G.S. 113A-50  
Coastal Area Management Act of 1974  
G.S. 113A-100

The North Carolina Administrative Code provides regulations under Title 15 for Coastal Management, Marine Fisheries, Parks and Recreation, the Wildlife Resources Commission and other agencies involved in the management and protection of the state's natural resources.

## II. Maintenance

Policy: At the present time, the NCNES shall rely on volunteer efforts to maintain the quality of the sanctuary sites. The sanctuary staff will coordinate periodic litter collections using local volunteers. All users of the sanctuary must respect the litter control and habitat protection policies. Cooperative agreements with enforcement officials will ensure the protection of the sites from serious degradation and littering.

Because the proposed component has traditionally been treated with respect by users and has not been subject to unduly high levels of use, maintenance of Masonboro Island does not present a difficult task. Should the volunteer efforts prove inadequate, other means will be pursued.

### B. Other Alternatives Considered

#### 1. No Action



Masonboro Island is the best example for its typology in the state of North Carolina. Without the establishment of a Masonboro Island Component, the largest and highest quality undisturbed embayment/bar-bound estuary in southeastern North Carolina would be unprotected from development so prevalent on adjacent barrier islands. Although the marshes and subtidal areas of the site are held in trust by the state, the potential development of contiguous uplands could be directly or indirectly deleterious to the estuarine biota, water quality, and physical processes. The omission of the site from the sanctuary would result in a loss of an opportunity to acquire a knowledge and understanding of this type of barrier island estuary.

Local sentiment to preserve the island has always been strong and is fortified by ongoing research and educational use of the site by such agencies as UNC-W, the MRC at Fort Fisher, and the New Hanover County Public School System. Traditional use of the site for fishing, shellfishing, hunting, and passive recreation (swimming, sunbathing, shell collecting, hiking) is also high. All of these present uses of the island could be adversely affected by development if no action were taken. An article appearing in the Wilmington Morning Star (May 17, 1984) states that a local developer is considering construction of a clubhouse on the north end of the island.

Masonboro Island is being considered for development. Should a "No Action" decision be made, island development can be anticipated which may result in an effect upon the integrity and pristine nature of the estuary. The NCNES encompasses prime examples of the diverse estuarine habitats in the state and thus can provide a framework for needed research into a myriad of estuarine ecology topics and coastal management issues. Such information can further be integrated into the research results from other sites in the NESP to benefit all estuarine areas in the country.

## 2. Alternative Boundaries

The boundary for the proposed component (see Figure 5) encompasses virtually the entire island complex and, hence, the included estuary. The only portion omitted is the jetty area. This boundary has been determined by the following considerations: inclusion of primary resources for research and education, adequate protection and manageability, sufficient terrestrial buffer zones, sanctuary access, and present ownership.

Two alternative boundaries have been considered in defining the boundary for the Masonboro Island component: I.) inclusion of only the north or south half of the island complex, and II.) the island area west of a line drawn down the north-south high ground axis, thus excluding the oceanfront from the sanctuary component (see Figures 7 and 8).

a. Inclusion of Primary Resources. The proposed boundary includes the vast majority of the estuarine and upland habitats of the island complex. Only the jetty area is omitted.



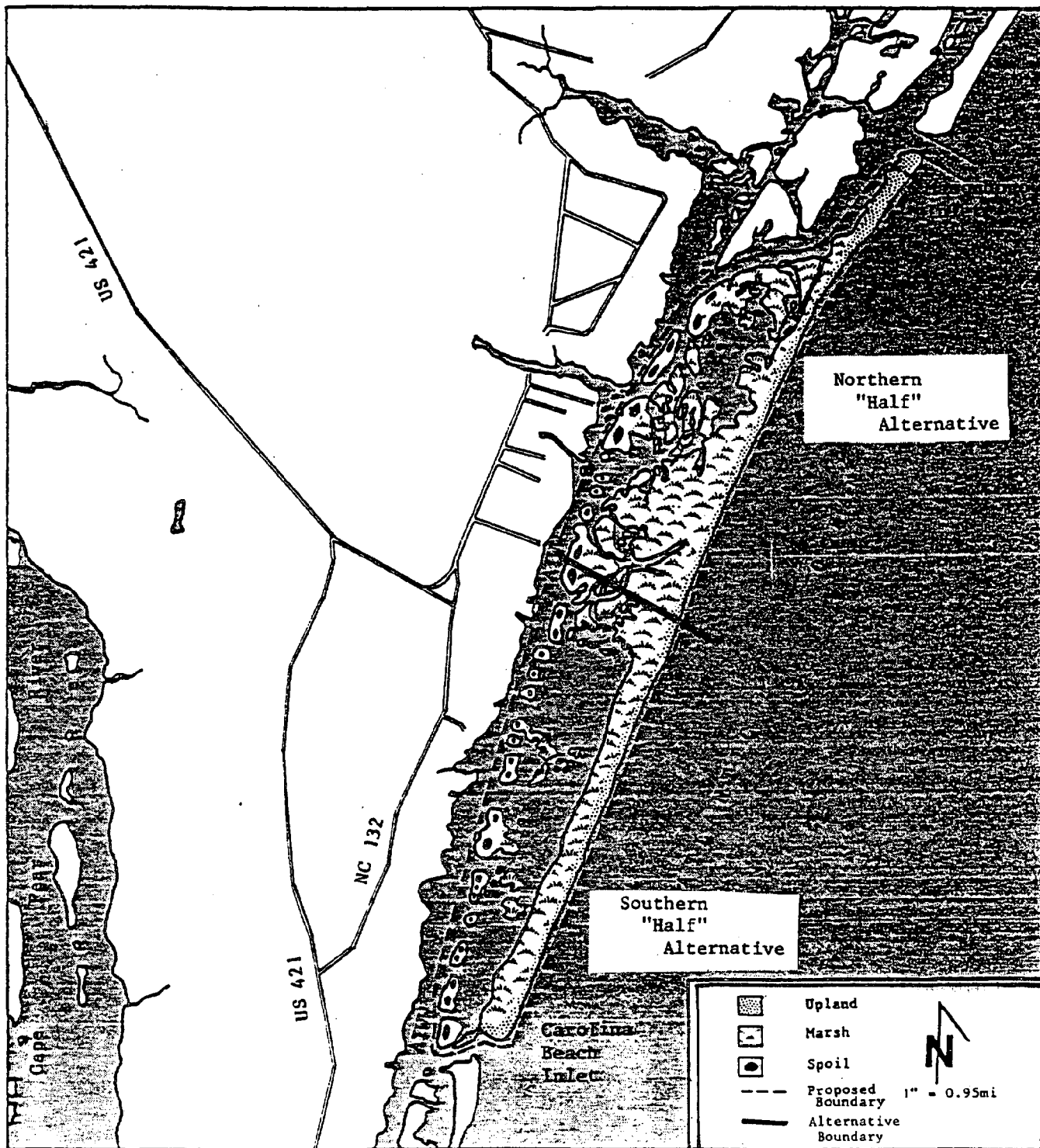


Figure 7: Alternative Boundary I (North or South Sections of Island as the Masonboro Island Component)



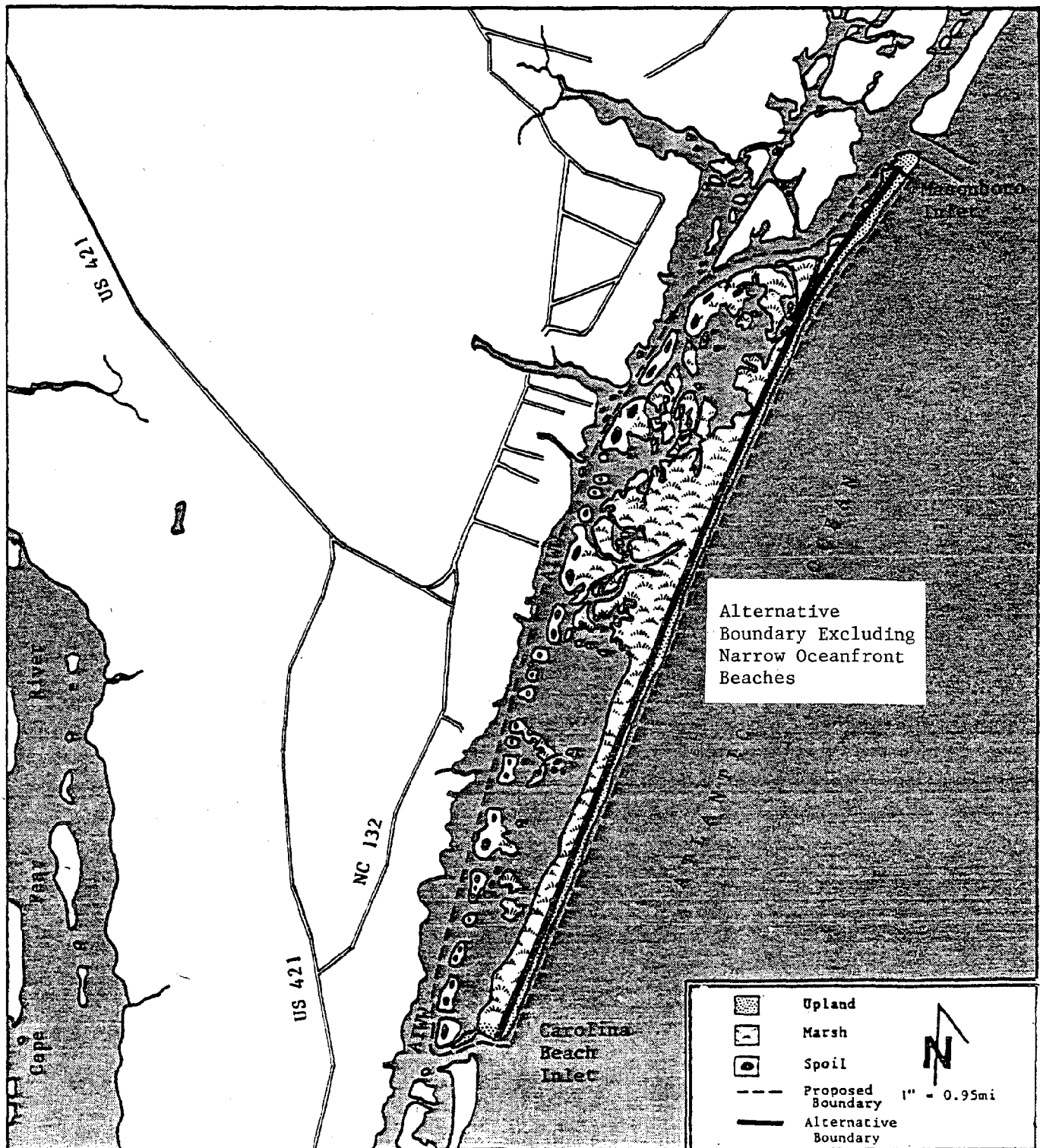


Figure 8: Alternative Boundary II (Excluding Oceanfront from the Proposed Masonboro Island Component)



Alternative I, either the north or south half of the island, does not include the entire estuary and, thus, will allow potential development--most likely on the ends of the island--to affect the site. Under this alternative the estuarine system will not serve as a valid control for comparison to other developed barrier island estuaries.

Alternative II, the island and estuarine area west of a line drawn down the north-south high ground axis, will protect the estuary, but does not ensure the protection of the contiguous upland habitats which are home to numerous animal species which are part of the salt marsh food web. In addition, nesting conditions for loggerhead sea turtles and colonial nesting water birds will be adversely impacted by oceanfront development in nesting areas.

b. Adequate Protection and Manageability. Because the proposed boundary will place most of the island in public ownership, protection and manageability of the island as an entire, undisturbed unit will be facilitated. Cooperative agreements with previously mentioned regulatory agencies will ensure surveillance and enforcement for the entire island area.

Alternative I will not encompass the entire estuary, leaving it vulnerable to the impacts of contiguous upland development and, in particular, deterioration of estuarine water quality from septic field drainage into the sound area. There will also be increased problems with enforcement, protection of fragile habitats (e.g., trampling of salt marsh areas), and other conflicts with the sanctuary system goals and objectives. Because a portion of the estuary will be in private ownership, boat use and access can be expected to increase with concomitant impacts on water quality and estuarine biota.

Similar adverse impacts on the estuary will result with Alternative II. Because the sandy barrier is rather narrow, any development will probably take place on the ends of the island. Even though the soundside area will be protected, adjacent construction and human habitation will result in such adverse impacts as reduced estuarine water quality (through ground water transport of septic field effluent etc.), increased foot and vehicular traffic throughout the island, windblown transport of litter, soil compaction, etc.

c. Terrestrial Buffer Zones and Access. Within the proposed boundary, the natural uplands and spoil areas delimit and buffer the entire estuary. Access will be primarily by private boat with occasional state boat transportation for the public in conjunction with MRC educational programs.

The two alternatives will not provide adequate buffer for the estuarine area. Alternative I only includes half of the estuarine area within the sanctuary component. Alternative II does not include upland buffer necessary to protect the estuary from contiguous private development. Access to the island will be increased with private development that will result in adverse impacts on plant and animal communities from off-the-road vehicle and foot traffic on the island.



d. Present Ownership. The ownership of the island uplands is divided among many owners and the uplands are currently zoned R-20 (low density residential).

### 3. Alternative Management Scheme

The proposed management plan is preferred because it places ownership under the state and administrative responsibility with one agency (OCM) that will manage the research and educational programs. The existing jurisdictions of other agencies relative to recreation and other traditional uses would be respected by the OCM to the extent that these traditional uses do not conflict with the purposes for establishing the Masonboro Island component. Consideration was given to alternative schemes; for example, creation of a state natural area on Masonboro Island. However, state funds are not available for complete acquisition of the island. Other mechanisms were rejected either due to a lack of funding or a lack of mechanisms to retain traditional uses plus development of research and educational programs.

### 4. Funding.

Three general means have been used in the past for acquisition of coastal natural areas in North Carolina. These include: (1) acquisition by the state either by purchase (e.g., Jockey's Ridge State Park, Dare County) or by land donation (e.g., Roosevelt Natural Area, Carteret County); (2) acquisition by private conservation groups, such as The Nature Conservancy, either by purchase (e.g., Nags Head Woods, Dare County) or by land donation (e.g., The Green Swamp, Brunswick County); (3) acquisition by federal/state funds through the NESP either by purchase (e.g., Rachel Carson Component) or by land donation (e.g., Zeke's Island Component). At the present time, no adequate source of funds is available for an estuarine sanctuary project (acquisition and operation) other than the NOAA/NESP funds here considered.

Special advantages of NOAA/NESP funding include:

(1) The emphasis on research and education programs while retaining other compatible traditional uses of the site;

(2) The present NCNES is already recognized locally and nationally. This recognition would increase the chances of receiving substantial research grants from other public and private sources, improve research and education opportunities at the site, and strengthen public support for continued pollution abatement and public enjoyment of the resource; and

(3) The NESP provides five years of matching operations funds which are needed to establish the proper management of the proposed component during its first years after establishment.

Federal estuarine sanctuary financial assistance is not available for other purposes. During the first years of operation, plans would be made for funding of the proposed component after federal funding expires. Sources of post-federal funding may include one or more of the



following: state agency funds; private donations or grants for operations; interest from an endowment raised by a not-for-profit corporation; a possible state legislative appropriation; equipment, services, and time donated to the proposed component by the private sector; and voluntary donations by users of the proposed component. Because the state of North Carolina is committed to the NCNES after federal funding is phased out, any or all of the preceding sources will be used to fund long-term administrative, operations and management, and research and educational needs.



### PART III: AFFECTED ENVIRONMENT

#### A. Masonboro Island - General Description

Masonboro Island is located in the Barrier Island Region of the Cape Fear Section of the North Carolina Coastal Plain (Harrington, 1980). The region is characterized by narrow fringing islands that parallel the mainland, but are separated from it by narrow sounds or estuaries (see Figures 7 & 8). The island is centered on coordinates 34° 11' N. and 77° 49' W.

Masonboro Island is approximately 13.3 km. (7.9 mi.) in length and varies from about 60 m. (200 ft.) to nearly 1.6 km. (1 mi.) in width, including the marsh-estuary complex. The island complex encompasses approximately 2,018 ha. (5,046 ac.), 87% (1,771 ha./4,428 ac.) of which is marsh-estuary area. The remaining acreage is comprised of 182 ha. (453 ac.) of natural barrier island uplands (beach, dunes, shrub thicket, maritime forest) and 66 ha. (165 ac.) of spoil islands on the sound side of the island (see Figure 5).

Masonboro Island is bounded by the Atlantic Ocean to the east, the Atlantic Intracoastal Waterway (AIWW) to the west, Masonboro Inlet to the north, and Carolina Beach Inlet to the south. The U.S. Army Corps of Engineers (COE)-Wilmington District maintains the two inlets and the AIWW by periodic dredging. The COE has also constructed a rock jetty at the north end of the island in an effort to stabilize Masonboro Inlet. Carolina Beach Inlet was artificially created in 1952 when local residents cut through the narrow barrier just north of the Town of Carolina Beach.

The topography of Masonboro Island is gently sloping to nearly flat except for a few isolated dunes 6 m. (20 ft.) or more above mean sea level. Most of the island's dunes are 5.2 m. (16.5 ft.) or less above mean sea level and occur as weakly developed foredunes. The prevailing low relief, narrow upland width, and lack of stable dunes are primarily the result of frequent overwash (Hosier and Cleary, 1977).

Masonboro Island is Holocene in origin, mainly composed of sands deposited by eolian or marine processes. Varying amounts of recent organic matter are incorporated into the upper horizons of the marsh soils.

Ecologically, the Masonboro Island estuary contains many ecosystems in common with other East Coast estuaries in the North Carolinas (Cape Hatteras to Santee River) and South Atlantic (Santee River to St. John's River) subdivisions of the Carolinian biogeographic region. For example, wetlands and shallows vegetation, and communities of fish and wildlife generally resemble those found associated with barrier islands in the southern half of North Carolina (see Table 1 for Zeke's Island and Rachel Carson components) and Georgia (e.g., Sapelo Island National Estuarine Sanctuary).



Figure 9. Regional Map

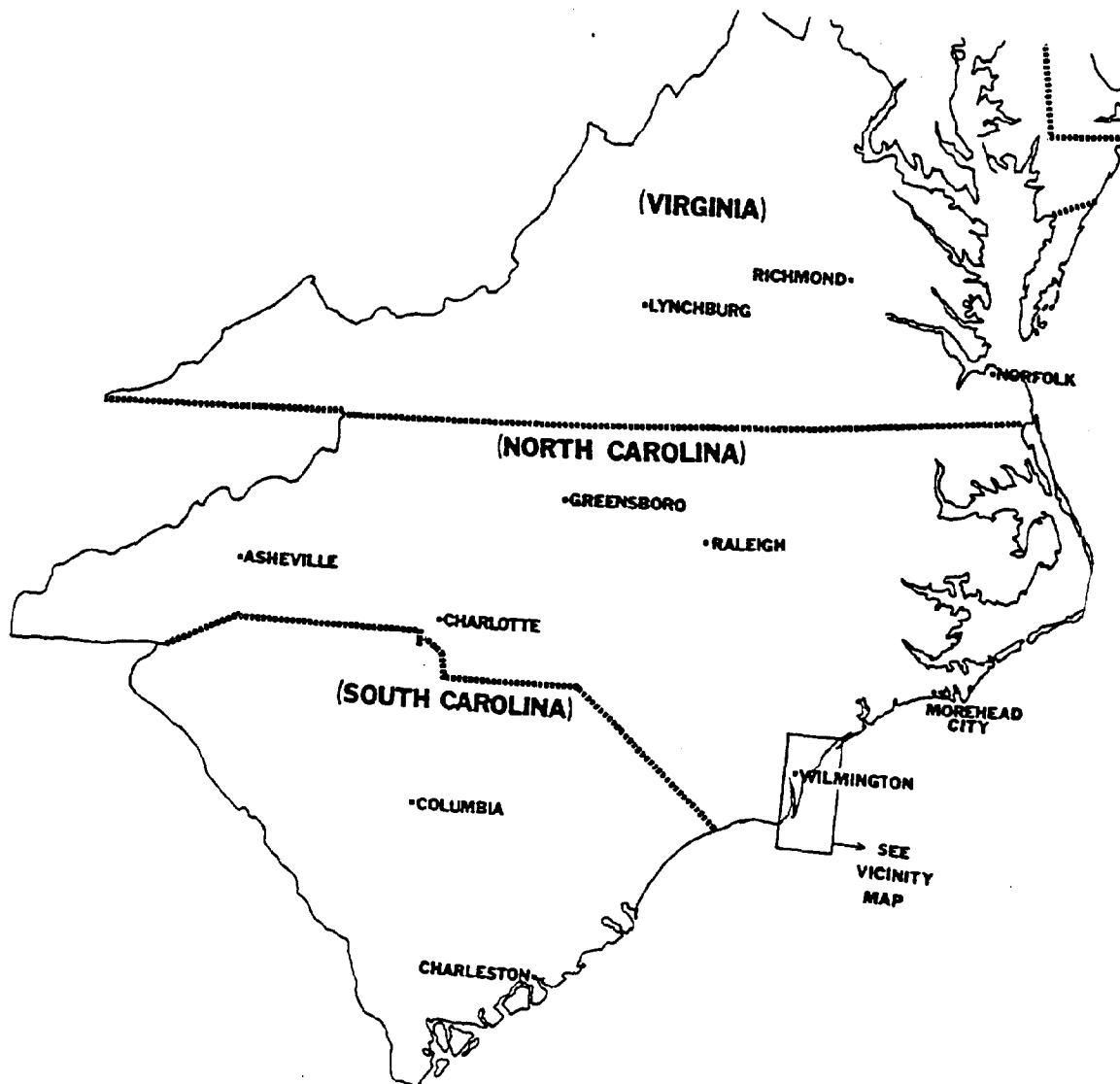
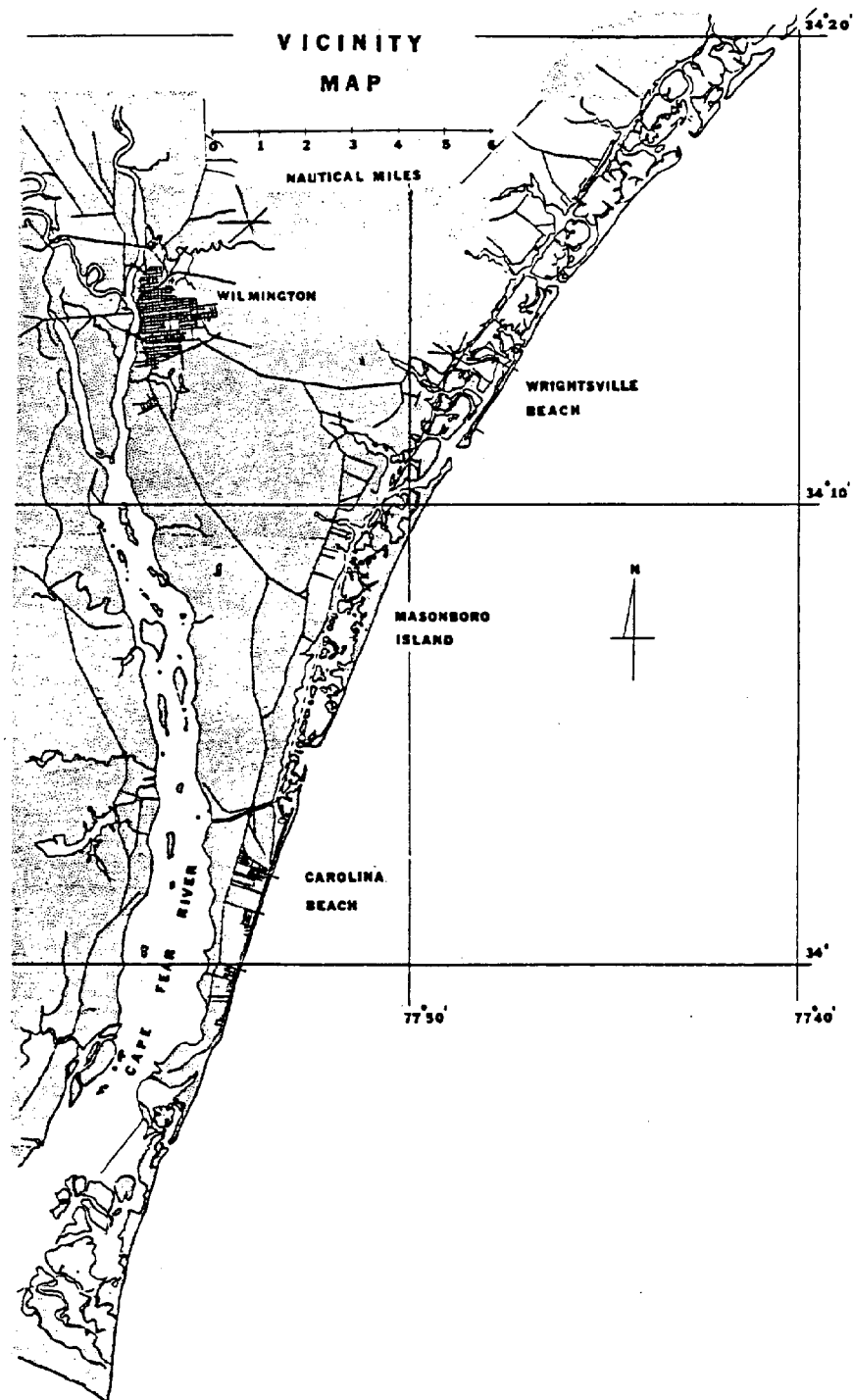




Figure 10.





The island complex contains all of the typical barrier island habitats. Estuarine habitat types present in the Masonboro Island complex include intertidal mud and sand flats, subtidal softbottoms, and subtidal vascular plant beds. Extensive transitional areas of low (intertidal) and high (supratidal) salt marsh fringe the estuary. Upland portions of the island are characterized by an ocean to marsh sequence of communities that include beach, dunes, shrub thicket or maritime forest, and shrub thicket-marsh transition.

The Masonboro Island estuary is a shallow, unstratified embayment dissected by extensive salt marshes. Salinities range from sea water concentrations (35 ppt) to less than 15 ppt, depending upon location in the estuary and the time of year. Local tides are semi-diurnal and microtidal.

## 1. Natural Environment

### a. Geology and Island Dynamics

Masonboro Island is the present-day counterpart of a barrier island formed some distance offshore, the time and depth being rather speculative. However, genesis of the original island is thought to have occurred by mainland beach detachment (Hosier and Cleary, 1977). According to Hoyt (1967) this took place during the last 5,000 years when the Holocene sea rise slowed down. Dune ridges formed along a seashore that was some distance seaward of the present coast. The rising sea then isolated the dune ridges from the mainland forming barrier islands separated from the mainland by sounds. The original barrier islands were then translated landward under the influence of the rising sea level. This island "migration" is still occurring as evidenced by old sound-side peat or shell deposits being exposed on the beaches of many present day barrier islands (Godfrey and Godfrey, 1976).

The inlets separating the island from adjacent barriers play a prominent role in island dynamics, and serve as examples of both natural and man-induced impacts. Masonboro Inlet, located on the north end of the island, has been stabilized by jetty construction on either side of the inlet channel. Carolina Beach Inlet was artificially cut in 1952 through a segment of the sandy barrier north of Carolina Beach. Local sentiment for the artificial inlet construction centered around the desire for shorter access to the ocean from waters behind Carolina Beach and Masonboro Island. However, since the inlet was cut, sand has accumulated on the sound end of the island and in the inlet (making navigation difficult), while the northern extension of Carolina Beach has experienced severe erosion necessitating a costly dredging - beach nourishment program.

The present day island primarily consists of unsorted Holocene sands; the coarsest textures are found in the upper beach and dune areas where former overwash fans consist of a mixture of sand and shell hash. The recent organics and finer textured sediments are mainly found in the marsh-estuary portion of the island where the calmer waters allow for the "settling out" of these smaller particles.



#### b. Soils

Soils of the island are classified in the entisol order--soils of such recent origin that horizon development is minimal or non-existent (Buol et al., 1980). Within the entisol order three series have been recognized on Masonboro Island, namely, the Carteret, Duckston, and Newhan series (SCS, 1977).

The Carteret series (Typic Psammaquent subgroup) underlies the tidal marshes of the island and consists of two subdivisions: (1) Carteret low associated with the regularly flooded or intertidal marsh, and (2) Carteret high occupying areas containing supratidal or brackish marsh species. These soils are composed of poorly to somewhat poorly drained sands mixed with various amounts of muck and shell hash.

The poorly drained sands of the Duckston series (Typic Psammaquent subgroup) are found within the shrub thicket and maritime forest communities on the island. In some areas local surface accumulations of organic matter have leached into the upper horizons causing incipient development of a spodic horizon (Hosier and Cleary, 1977).

Dune and grassland areas along the ocean side of the island are underlain by excessively to somewhat excessively well-drained sands of the Newhan series (Typic Udipsamment subgroup). These soils contain variable amounts of calcareous shell material and exhibit low fertility and water holding capacity.

#### c. Hydrology

The waters associated with Masonboro Island can be divided into outer open coast and inner back bay. The outer coast region is a normal marine environment, and the back bay or sound fits all of the criteria of an estuarine embayment according to the regulations for the National Estuarine Sanctuary Program (NESP) (see Appendix 2). The sound waters have restricted access to the sea via the tidal inlets at either end of the island, and these waters are significantly diluted by freshwater mainland streams, surface runoff, and ground water seepage both from the island and the mainland coast. The waters of the Cape Fear River (via Snow's Cut) do not in any way significantly influence the Masonboro Island estuary (U.S. Army Corps of Engineers, 1980). The extensive tidal flats and marshes backing Masonboro Island receive a considerable amount of freshwater influx, not only from runoff and groundwater, but also from direct precipitation, 10-12.5 cm. (4-5 in.) per month. Tidal flushing is not complete, so that the influence of brackish water is continuous, especially at the midpoint region between inlets (Zullo, 1984).

Classification of Masonboro Island as an embayment is justified by salinity data (see Appendix 5) which documents a significant freshwater input within the island's sound-side waters. Freshwater emanating from mainland creeks, runoff, and ground water flows in a northeasterly direction toward Masonboro Inlet located at the north end of the island.



This freshwater input and flow discharge pattern affect a wide range of salinity readings throughout this unstratified basin.

Tides in the Masonboro Island area are semi-diurnal and classified as microtidal by Leatherman (1982). The mean tidal range in the vicinity of Masonboro Island is 1.15 m. (3.8 ft.) with spring tides averaging 1.37 m. (4.5 ft.).

Water quality within the Masonboro Island estuary is generally very good to excellent, although mainland creeks contribute low to moderate levels of bacteria to the adjacent AIWW during ebb tides. Primary sources of pollution are septic tank effluents and surface runoff from that portion of New Hanover County draining into the sounds. However, this pollution is counteracted by the tidal influences of flushing by the Atlantic Ocean via Masonboro and Carolina Beach Inlets (Corps of Engineers, 1980). The estuary's waters are of sufficiently high quality to be designated a primary nursery area by the N.C. Division of Marine Fisheries (DMF) (Carpenter, 1984).

#### d. Climate

Although there are no weather stations in the immediate vicinity of the island, information concerning climatic conditions may be inferred from data collected at Wilmington, 11.2 km. (7 mi.) to the west, and Southport, 32 km. (20 mi.) to the southwest (National Oceanic and Atmospheric Administration 1950-1981). Climatic information for nearby Baldhead Island (Army Corps of Engineers, 1977), is also applicable to Masonboro Island. In general, the climate may be described as warm temperate mesothermal with summer temperatures averaging in the high 20s°C (80s°F) (90°F days are rare on the barrier islands), while winter temperatures below -4°C (25°F) are quite rare. The yearly freeze-free period averages over 240 days per year.

Precipitation in the area is almost all in the form of rain with only occasional snow in about half the years, and measurable amounts in one out of five. Rainfall averages 1,171 mm. (50.85 in.) annually, well distributed throughout the year. Prevailing winds in the Masonboro area are from the southwest throughout the spring and summer seasons. In the fall winds change to northeasterly, while winter winds are mainly from the north. Tropical storms moving along the eastern seaboard occasionally pass within a few miles of the island. Although a major hurricane has not hit the North Carolina coast in over two decades, past storms (122 between 1700 and 1964) have produced heavy rains, high winds, and abnormally high tides resulting in significant alteration of many barrier island topographies. (Moorefield, 1978).

Many of the overwash fans visible on the island are the result of high seas generated by extratropical storms, better known as "northeasters". These storms generally occur from October to May and are characterized by strong northeast winds which may blow continuously for 3 or more days. (Moorefield, 1978).



#### e. Biology

Vegetation. A list of vascular plant species found in the proposed component is in Appendix 6.

The following discussion of the vegetation of the proposed Masonboro Island site follows the categories set forth in the proposed regulations for the NESP (see Appendix 2). The majority of this information comes from the North Carolina Office of Coastal Management (OCM) staff's familiarity with the island's flora and from Hosier and Cleary (1977). Plant communities to be described include maritime forest-woodland, coastal shrublands, coastal grasslands, coastal marshes, intertidal mud and sand flats, subtidal softbottoms, and subtidal grassbeds.

The extent of maritime forest-woodland is restricted to two areas totaling approximately 4 ha. (10 ac.) near the middle of the island. The forest is an example of the broad-leaved evergreen subtropical forest biome with canopy dominants (3-8.1 m./10-26.5 ft. in height) including live oak (Quercus virginiana), red cedar (Juniperus virginiana), loblolly pine (Pinus taeda), and Hercules' club (Zanthoxylum clava-herculis). Subcanopy trees and shrubs are represented by transgressives of the above species plus hackberry (Celtis laevigata), Carolina laurel cherry (Prunus caroliniana), and tough bumelia (Bumelia tenax)--a species given "significantly rare status" by Sutter et al. (1983) (see Table 5). Wax myrtle (Myrica cerifera), yaupon (Ilex vomitoria), and cat-briers (Smilax spp.) are typical shrubs and vines present in the community. Where light levels in the understory permit herb growth, there are scattered colonies of iresine (Iresine rhizomatosa), bedstraw (Galium tinctorium), and lippia (Lippia nodiflora).

The coastal shrublands or shrub thicket ecosystem on Masonboro Island is typical of the biome type found in the Southeast. This vegetation type runs in a narrow, discontinuous strip within the central portion of the island's upland length. Overstory vegetation (1.5-4 m./5-14 ft. in height) is dominated by salt-pruned wax myrtle, yaupon, red cedar, live oak, and silverling (Baccharis halimifolia). Shrubland vegetation intermixes with adjacent sound side coastal marsh communities within a zone of scattered silverling, wax myrtle, false willow (Baccharis angustifolia), and marsh elder (Iva frutescens). On the grassland side of the shrubland ecosystem, sparse, dwarf shrubs and stunted trees include live oak, yaupon, and Hercules' club.

A third ecosystem type found on Masonboro Island is coastal grassland characteristic of the Southeast/Gulf Region. Sea oats (Uniola paniculata) dunes are a prominent topographic feature on the island and form a nearly continuous line among the ocean side. Because of the high frequency of overwash, these dunes are short-lived features and are generally smaller and less well-developed than dunes on nearby barrier islands (e.g., Smith Island/Brunswick County, Bogue Banks/Carteret County). Floral richness on the dunes is generally rather low with primary species consisting of sea oats, seaside goldenrod (Solidago sempervirens), sea rocket (Cakile harperi), dune spurge (Euphorbia



Table 4. Plants Recorded at the Proposed  
Masonboro Island Component Having  
State Status.

<u>Species</u>	<u>N.C. Status<sup>1</sup></u>
Tough Bumelia <u>(Bumelia tenax)</u>	Significantly Rare

<sup>1</sup>Sutter, R., L. Mansberg, and J. H. Moore. (1983). Endangered, Threatened, and Rare Plant Species in North Carolina: A Revised List. ASB Bulletin. Vol. 30, No. 4.



ammanioideus, E. polygonifolia), camphorweed (Heterotheca subaxillaris), and sea elder (Iva imbricata).

The other subunit of the coastal grassland on the island is the flat to gently sloping areas immediately behind the dune line. These grassy flats exhibit relatively higher species diversity and are dominated by salt meadow cordgrass (Spartina patens) with lesser amounts of seaside goldenrod, sand primrose (Oenothera humifusa), horseweed (Erigeron canadensis), day flower (Commelina erecta), Drummond's prickly pear (Opuntia drummondii), thistle (Carduus spinosissimus), and yucca (Yucca filamentosa).

Tidal marshes are the exclusive type of coastal marsh found on Masonboro Island. The vast majority of the intertidal area is dominated by smooth cordgrass (Spartina alterniflora) which forms extensive rhizomatous colonies in the poorly drained, mucky sands. At the upper limit of the intertidal zone, dominance by various combinations of salt grass (Distichlis spicata), glasswort (Salicornia virginica), sea lavender (Limonium carolinianum), and smooth cordgrass form a matrix of communities primarily determined by variations in microrelief and salinity.

Portions of the marsh above the daily high tide limits intermittently receive haline to brackish water inputs as a result of storm and spring tides. Community dominance is often quite complex with a number of herbs occurring in patches as sole dominants or as components of mixed cover types. Typical species include salt meadow cordgrass, sea ox-eye (Borrchia frutescens), marsh aster (Aster tenuifolius), salt grass, sea lavender, glasswort, and black needlerush (Juncus roemerianus).

Localized algal colonies also occur on the intertidal flats and subtidal softbottoms of the island's estuary. Typical species include sea lettuce (Ulva rigida), green fleece (Codium isthocladum), false agardhiella (Gracilaria verrucosa), and dictyota (Dictyota dichotoma).

Subtidal beds of eel grass (Zostera marina) occur within the estuary. This site represents the southernmost known occurrence of the species in the state--this location is not mentioned in Radford et al. (1968).

Fish and Wildlife. The marine, shallow sound, tidal marsh, and upland habitats associated with Masonboro Island are populated by numerous fish and wildlife species which inhabit the site year-round or on a seasonal basis. The site is also located within the Atlantic Flyway.

Of Masonboro Island animals, many do not remain in a single type of habitat, but move back and forth between two or more habitat types in tidal, daily, or seasonal cycles. These species require combinations of habitat types to fulfill their life requirements; for example, the raccoon (Procyon lotor) lives in the maritime forest or shrub thicket and often feeds in the marshes during low tides, and most of the commercial and sport fishes caught in the ocean spend some portion of



their life cycles in estuaries such as the one within the proposed Masonboro Island Component.

Some of the Masonboro Island habitats support locally significant animal species not recognized as rare on state or federal lists; for example, a large population of heart urchins (*Moira* sp.) in a portion of the sound, subtidal populations of tunicates whose normal range is considerably south of the site, spoil area nesting sites for local colonial waterbirds (Parnell and Soots, 1979), and a diverse polychaete fauna giving in the subtidal sediments.

#### Endangered, Threatened, and Special Concern Animals.

Animal species currently on the Federal Endangered and Threatened Species List and those considered endangered, threatened, or of special concern by North Carolina biologists (Cooper et al., 1977), and which occur at the proposed sanctuary component, are shown in Table 6. The state list has four categories (in decreasing order of endangerment): endangered, threatened, special concern, and undetermined.

The COE (1977) lists twelve Federally designated endangered or threatened species which potentially occur in the Masonboro Island vicinity as a result of their geographic ranges:

- American alligator
- Green sea turtle
- Hawksbill sea turtle
- Kemp's ridley sea turtle
- Leatherback sea turtle
- Loggerhead sea turtle
- Shortnose sturgeon
- Peregrine falcon
- Brown pelican
- Red-cockaded woodpecker
- Southern bald eagle
- Florida manatee

Telephone communication was made with the U.S. Fish and Wildlife Service (FWS) (April 20, 1984) and National Marine Fisheries Service (NMFS) (April 24, 1984). It was agreed by both agencies that no federally listed endangered nor threatened species, under their jurisdiction, apart from occasional transients (brown pelican and loggerhead sea turtle, etc.), are known to exist in the Masonboro Island area (see Table 6).

Information concerning Masonboro Island animals having state status was obtained (April 18, 1984) from the files of North Carolina Natural Heritage Program and by personal communication with faculty at UNC-W (January and February, 1984).

Endangered. The brown pelican (*Pelecanus occidentalis*) is commonly seen flying or feeding along the ocean beach of Masonboro Island during the summer months. However, there are no records of pelican nesting in the island area. This species is also listed as endangered by North Carolina biologists.



Table 5. Animals Recorded at the Proposed  
Masonboro Island Component Having  
Federal or State Status (additional  
species recorded near the site are  
discussed in the text)

<u>Species</u>	<u>Federal Status</u> <sup>1</sup>	<u>N.C. Status</u> <sup>2</sup>
Brown Pelican* ( <u>Pelecanus occidentalis</u> )	Endangered	Endangered
Loggerhead Sea Turtle** ( <u>Caretta caretta</u> )	Threatened	Endangered
Osprey* ( <u>Pandion halietus</u> )	-	Special Concern
Wilson's plover** ( <u>Charadrius wilsonia</u> )	-	Special Concern
Least Tern** ( <u>Sterna albifrons</u> )	-	Special Concern
Common Tern** ( <u>Sterna hirundo</u> )	-	Special Concern
Black Skimmer** ( <u>Rhycolops niger</u> )	-	Special Concern
Ipswich Sparrow* ( <u>Passerculus sandwichensis princeps</u> )	-	Special Concern
Parchment Tube Worm ( <u>Chaetopterus variopedatus</u> )	-	Special Concern
Hartman's Echiurid Worm ( <u>Thalassema hartmani</u> )	-	Special Concern
Polychaete Worm ( <u>Notomasus lobatus</u> )	-	Special Concern

<sup>1</sup>Federal Register of Endangered and Threatened Species.

<sup>2</sup>Cooper, J.E. et al. (eds.). 1977. Endangered and Threatened Plants  
and Animals of North Carolina. N.C. Museum of Natural History.  
Raleigh, N.C.

\* - denotes seasonal transient species.

\*\* - denotes seasonal nesting species.



Peregrine falcons (Falco peregrinus) have not recently been reported from Masonboro Island, but have been sighted as rare seasonal transients at nearby Baldhead Island (Brunswick County).

Threatened. In 1980 and 1981, a statewide aerial survey for loggerhead sea turtle (Caretta caretta) nesting activity counted a total of 35 and 46 crawls (or approximately 2.5 crawls/kilometer during the summer nesting seasons (Crouse, 1984). This activity was considerably higher than seen on the neighboring islands of Wrightsville Beach and Carolina Beach, suggesting that this island may provide useful, undisturbed nesting habitat for this species. An active nest site was reported by UNC-W biologists in 1983. More nests have been reported in June, 1984 (see Appendix 7). This species is listed as endangered by North Carolina biologists.

Special Concern. Three marine worms found in the Masonboro Island estuary have special concern status according to state biologists: parchment tube worm (Chaetopterus variopedatus), Hartman's Echiurid worm (Thalassema hartmani), and the polychaete worm (Notomasus lobatus).

Least terns (Sterna albifrons), common terns (Sterna hirundo), Wilson's plovers (Choradrius wilsonia), and black skimmers (Rhycopis niger) nest on island (see Appendix 7).

The American osprey (Pandion haliaetus) has been observed feeding in the Masonboro Island estuary. No local nesting birds have been recorded, however.

The Ipswich sparrow (Passereulus princeps sandwichensis) is a winter resident in the dune areas of Masonboro Island.

Marine Mammals. No marine mammals have been reported from the Masonboro Island estuary. Sightings of the Atlantic bottlenose dolphin (Tursiops truncatus) are common along the ocean side of the island. The carcass of a Gulfstream beaked whale (Mesoploden europaeus) was discovered floating in Snow's Cut in 1978.

Wetland and Terrestrial Mammals. The mammals known from the island are primarily found in the maritime forest-woodland, coastal shrubland, and grassland habitats. Prevalent species are marsh rabbit (Sylvilagus palustris), cotton rat (Sidmodom hispidus), and raccoon (Procyon lotor). Raccoons commonly forage in the salt marshes during nocturnal low tides. The only mammal regularly seen in the dune areas is the house mouse (Mus musculus). River otter (Lutra canadensis) and mink (Mustela vison) are found in the marsh areas.

Birds. Many species of land, wetland, and water birds are found in the Masonboro Island area. A list of birds known from the site and those species known to occur in similar habitats in the vicinity is in Appendix 7.

A typical array of barrier island bird species are found throughout Masonboro Island's habitats. Nearshore ocean waters are frequented by brown pelicans (Pelecanus occidentalis), shearwaters (Puffinus spp.), royal terns (Sterna maxima), herring gulls (Larus argentatus),



and laughing gulls (Larus articilla). The intertidal beach zone serves as a resting and feeding area for such species as sandpipers (Calidris spp.). Mourning doves (Zenaidura macroura), ground doves (Columba passerina), and common night hawks (Chordeiles minor) nest and feed within the dune areas, while boat-tailed grackles (Quiscalus major) and red-winged blackbirds (Agelaius phoeniceus) feed upon sea oat seeds in the fall. In the grasslands, black skimmers (Rhynchops niger), night hawks, and american oystercatchers (Haematopus palliatus) are seasonal nesters where vegetation is sparse, in contrast to the willets' (Cataptrophorus semipalmatus) preference for dense grass cover. The shrub thicket and forest areas are important resting sites for a variety of small birds, particularly warblers and sparrows, during fall migrations. The marshes and associated tidal flats and creeks are foraged during low tides by numerous species including great blue herons (Ardea herodias), little blue herons (Florida caerulea), Louisiana herons (Hydranassa tricolor), snowy egrets (Egretta thula), great egrets (Casmerodius albus), willets, american oystercatchers, black skimmers, and clapper rails (Rallus longirostris).

An area on the north end of the island is maintained in an open, unvegetated state by overwash and wind-blown sand migration and accumulation. Ground nesting birds which utilize this site include black skimmers, Wilson's plovers, common terns, and least terns. Parnell and Soots (1978) consider this area to be a significant nesting site for local colonial waterbirds (see Appendix 7).

Reptiles and Amphibians. Masonboro Island has a low number of reptiles and amphibians compared to nearby barrier islands (Engel's, 1942 and 1952; Fussell, 1978). The majority of the island's observed reptiles occur in the upland habitats: eastern glass lizard (Ophisaurus ventralis), six-lined racerunner (Cnemidophorus sexlineatus), and eastern coachwhip (Masticophis flagellum) on the dunes; corn snake (Elaphe guttata), glass lizard, racerunner, and coachwhip in the grasslands; rough green snake (Ophedrys aestivus) associated within the shrub thicket. The diamond-back terrapin (Malaclemys terrapin) is found in the salt marshes.

Seasonally wet depressions associated with the shrub thicket and maritime forest communities contain frog and toad populations. Amphibians present in these habitats include southern toad (Bufo terrestris), green treefrog (Hyla cinerea), and squirrel treefrog (Hyla squirella).

Fishes. Forty-four species of fishes have been collected from the Masonboro Island estuary by the N.C. Division of Marine Fisheries (DMF). The detritus-rich waters of the estuary serve as an important nursery area for commercial and sport marine species including spot (Leiostomus xanthurus), mullet (Mugil cephalus), summer flounder (Paralichthys dentatus), pompano (Trachinotus falcatus), menhaden (Brevoortia tyrannus), and bluefish (Pomatomus saltatrix). Some of the other fish species present include striped killifish (Fundulus majalis), mummichog (Fundulus heteroclitus), pinfish (Lagodon rhomboides), silversides (Menidia menidia), and sheepshead minnow (Cyprinodon variegatus). Fish migration and nursery ground



productivity are controlled by seasonal environmental factors such as salinity, temperature, water flow, food availability, food type and bottom sediments.

Aside from census work done by the DMF (see Appendix 7), only two studies on the fishes of Masonboro Island estuary have been completed: Needham (1980) and Stanley (1982). This pristine estuarine area would be an ideal site for many detailed ichthyological studies.

Invertebrates. Numerous invertebrate species populate the various natural habitats of Masonboro Island. These organisms often constitute important food sources (e.g., zooplankton in the sound waters) for organisms of higher trophic levels. A list of macroinvertebrates found in the Masonboro Island area is in Appendix 8.

The intertidal beach ecosystem of Masonboro Island is characterized by relatively short, steep beaches compared to neighboring Wrightsville and Carolina Beaches. However, certain stretches of the Masonboro Island beach are wide enough to support local populations of ghost crabs (Ocypode quadrata) which burrow just above the mean high tide limit. Exemplary of the intertidal zone animals are mole crabs (Emerita talpoida), while coquina clams (Donax spp.) are less common.

The upland areas of the island are home to many insects. Deer flies (Chrysops sp.) may bite visitors to the shrub thicket or maritime forest during early summer, while mosquitos (Aedes sp.) can be a problem in these areas as well as the marshes during the late summer. Various bees--including honeybees (Apis mellifera)--are attracted to blossoms of dune forbs, as are various butterflies and moths. Each fall, Masonboro Island is visited by groups of migrating monarch butterflies (Danaus plexippus).

The dense stands of smooth cordgrass salt marsh are home to a fauna highly adapted to the semi-diurnal tides. Marsh periwinkle (Littorina irrorata), ribbed mussel (Geukensia demissus), and fiddler crabs (Uca spp.) are representative species.

Invertebrate residents of the intertidal mud and sand flats include various mollusks: quahog clam (Mercenaria mercenaria), stout tagelus (Tagelus plebeius), oyster (Crassostrea virginica), and mud snail (Nassarius obsoletus). A substantial fauna of marine worms such as parchment worm (Chaetopterus sp.), plumed worm (Diopatra coprea), blood worm (Glyeria sp.), scale worm (Ledpidasthenia varia), Hartman's echiurid (Thalassema hartmani), and notomastus (Notomastus lobatus) is also present.

Clumps of oyster shells in the estuarine waters serve as suitable substrates for the attachment of a number of sessile organisms: sponges (Microciona prolifera, Hymeniacidon sp.), sea whip (Leptogorgia virgulata), oysters, and tunicates (Symplegma sp., Ecteiniascidia turbinata, Diplosoma floridana). Each of these tunicates represents a range extension or disjunction from more southern populations (Dr. Anne McCrary, personal communication of January 18, 1984, UNC-W). Other organisms frequently burrowing or living on the subtidal bottom sediments include the spider crab (Libinia sp.), heart urchin (Moiria sp.),



brachiopod (Glottidia sp.), and important commercial species such as blue crab (Callinectes sapidus) and shrimps (Penaeus spp.).

#### f. Estuarine Ecosystem

Generalized patterns of energy flow (production and feeding) for the proposed Masonboro Component are shown in Figure 9. These diagrams represent many interwoven food chains (e.g., vascular plants to detritus to crustaceans to small fish to flounder, or dune forb to leaf beetle to songbird to bird of prey), and there are many species that feed on more than one type of food. In general, green plants use energy from the sun to produce biomass which is consumed while alive by grazing animals (herbivores) or after death by detritus-feeding animals (detritivores). These primary consumers in turn are eaten by larger and larger animals, culminating in the highest-level consumers such as summer flounder, marsh terrapin, herons, osprey, river otter, and man. The great abundance of marsh plants, small invertebrates, and small fish in the Masonboro Island estuary provides a rich food base for the development of economically important larger animals such as sport and commercial fishes, waterfowl, and blue crab.

The major producers on the Masonboro Island estuary are phytoplankton and large algae in the waters, and vascular plants in the intertidal areas. Zooplankton and benthic invertebrates feed on phytoplankton and on detritus from the plants of the marshes and shallow sounds as well as from terrestrial sources. The zooplankton and benthic invertebrates are food for larger invertebrates and small fish, which in turn are eaten by larger fish, birds, and other animals. Estimates of the relative importance of terrestrial and estuarine energy (food) sources vary.

Research from other estuaries suggests that Masonboro Island marshes may absorb nutrients from mainland runoff, but it is not clear to what extent these nutrients may be returned to the sound with the decomposition of dead plants. The vegetation of the wetlands and shallows is a nutrient-recycling system that channels nutrients into food webs that yield resources for society in the form of finfishes, shellfishes, and crustaceans.

### 2. Current Uses of the Site

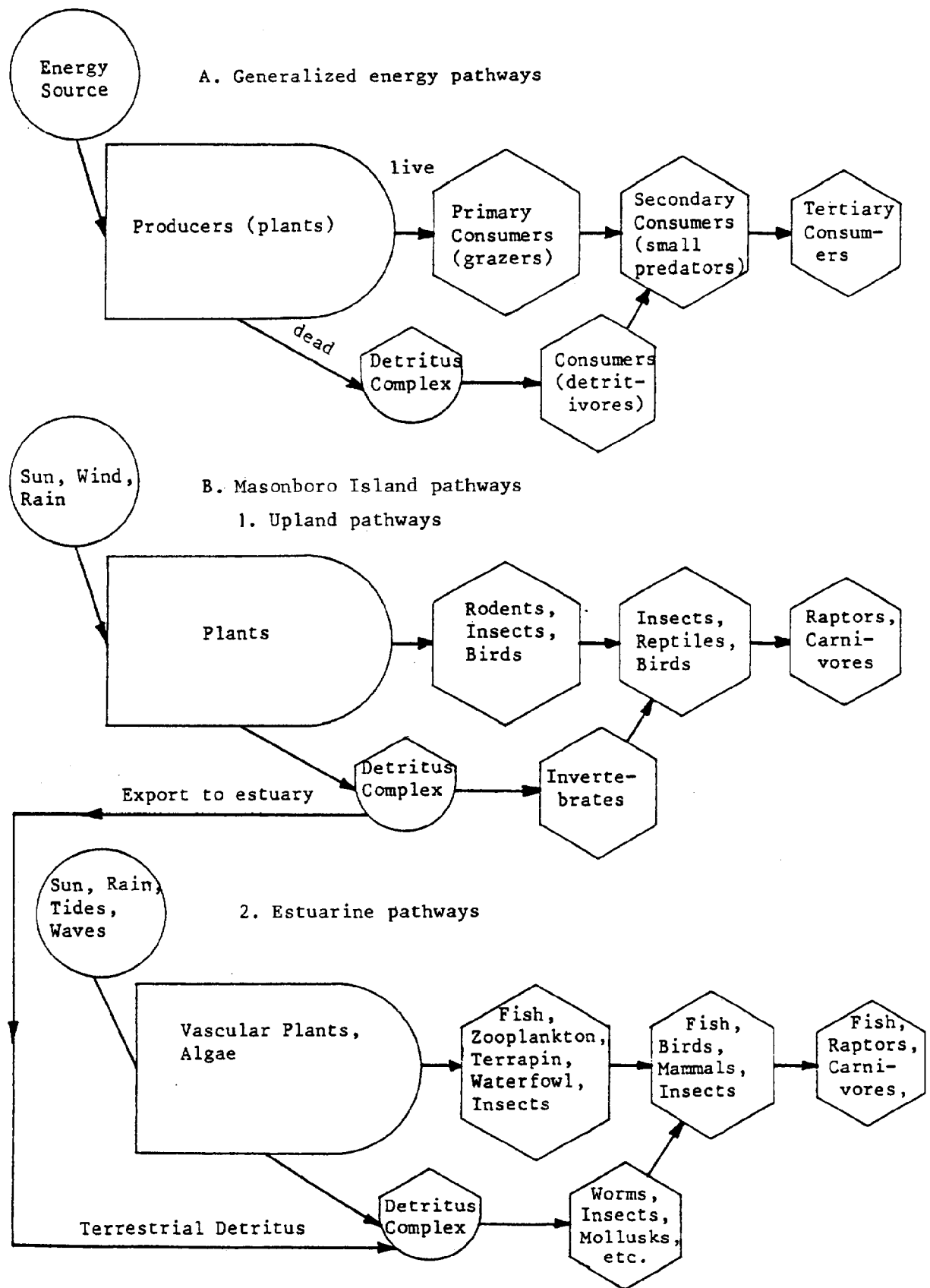
#### a. Commercial and Recreational Fishing

Fishing has been a traditional activity at Masonboro Island both in the estuarine area and along the ocean beach. The ocean side of the site is used for both sport fishing, primarily surf fishing, and limited shore-based commercial fishing mostly with gill nets. Sound side fishing is restricted to hand gear (gill nets, crab pots, clam rakes, etc.) because the entire estuary is designated as a primary nursery area by the DMF.

The DMF has kept commercial catch records on Masonboro Sound since 1970. From 1970 to 1979, an average of 54,600 lbs. of seafood (finfish and shellfish) were landed per year with an average value of \$54,500. The average for 1980-83 is considerably higher at 291,212 lbs. with an average value of \$386,147. Approximately 64% of this seafood weight and



Figure 11.





89% of the value are shellfish--crab, shrimps, clams, oysters--with clams and shrimps having the highest average value. The remaining 26% of the average weight and 11% of the value are finfish, including bluefish, croaker, flounder, mullet, sea trout, and spot.

Because the above figures do not include yields from sport and ocean commercial fishing, actual annual seafood weights and values for the island are presumably higher. Surf fishermen typically land flounder, bluefish, puppy drum, sea trout, spot, and whiting. Ocean commercial catches are primarily by gill nets which catch spot, whiting, mullet, and sea trout.

This valuable fishery resource and nursery area would be maintained and would benefit from estuarine research if the proposed component were established.

#### b. Hunting

Hunting activity on Masonboro Island is relatively light compared to nearby undeveloped coastal areas in New Hanover County. Seasonal marsh hen and dove hunting is moderate, while duck hunting pressure is low for scaup and other species visiting the estuary during the fall and winter season. All of the hunting is either done while walking through the marshes or dunes or by waiting for birds to visit open areas adjacent to wooded uplands. Present hunting activity on the island would continue under the management plan for the proposed Masonboro Island Component. State hunting regulations would be enforced by the local Wildlife Resources Commission officer.

#### c. Recreation

Beach use, hiking, bird watching, and camping are the remaining major recreational uses of Masonboro Island. These uses are described below; fishing and hunting were discussed in Section 2a-b.

Beach Use. One of the most popular uses of Masonboro Island is sunbathing, picnicking, and swimming: on warm days from spring through fall. Local residents and tourists usually land private boats on the small, sound-side sandy beach at the north end of the island and walk to the ocean beach, or land their boats directly on the ocean beach. A smaller number of beach users are found on the same days at the Carolina Beach Inlet end of the island.

The number of people using the island on a given day is mainly limited by the number of boats able to land on the restricted sound-side beaches. Area residents estimate that as many as 40-50 people are on the north end of Masonboro Island on a warm, sunny day in mid-summer. Allowing for a low number of beach users along the remainder of the island and somewhat more toward the south end, the maximal beach use of the island might be 80-100 persons per day.

Beach use has little impact on the island's uplands since most people follow established trails through the dunes. This reduces the impacts on dune grasses which are easily trampled. Littering does not



appear to be a major problem and could be dealt with by periodic volunteer "pick-up" efforts.

Hiking. Although there are no designated trails on this undisturbed barrier island, individuals or groups can hike for miles along the ocean beach, occasionally crossing over into less easily traversed habitats (e.g., shrub thicket and marsh). The Cape Fear Chapter of the Sierra Club has several outings per year on the island which include day hikes. Because the majority of hiking is done on the beaches, no significant impact on fragile island habitats has been observed.

Bird watching. The Lower Cape Fear Bird Club, the Sierra Club, and classes from UNC-W are the major users of the island for occasional bird watching trips, particularly during spring and fall bird migrations. Because these groups are very familiar with the island's undisturbed natural integrity, very little to no impacts are created even when the groups enter the marsh areas to observe waterbirds.

Camping. Camping is a popular activity on portions of Masonboro Island's upland areas during the summertime and on warm weekends throughout the year. This has resulted in littering, camp fires, and localized impacts on plant communities (e.g., trampling of dune grasses and chopping down of shrubs and trees for firewood). If Masonboro Island were designated as a sanctuary component, primitive camping would be on a permit basis only (see Part II-A-f).

#### d. Spoil Disposal

The COE - Wilmington District maintains a 304.8 m. (1,000 ft.)-wide easement along the AIWW which includes most of the spoil islands on the west edge of Masonboro Island. These diked spoil areas were created by deposition of dredged material on former salt marsh sites decades ago. The AIWW channel is maintained at a 3.7 m (12 ft.) depth with yearly checks to verify if any maintenance dredging is necessary--no set dredging schedule exists along this portion of the AIWW. The proposed boundary (see Figure 5) includes the spoil islands within the COE easement on the west edge of the Masonboro Island complex. The proposed spoil disposal management plan (discussed in Part II. A.3.f.IV) to be developed between the COE, OCM, and NESP will insure that adverse impacts upon the sanctuary component will be minimized while AIWW maintenance dredging activities may continue as necessary.

According to COE staff the most active areas of shoaling or channel filling occur in and behind the inlets which therefore require more frequent dredging. Spoil from inlet dredging has recently been used to nourish eroding beaches at Wrightsville Beach and Carolina Beach.

The jetty situated on the north end of Masonboro Island was constructed in the late 1970's and completed in 1980. Because the jetty effectively stops the natural north to south longshore transport of sand, severe erosion of the north end of the island would eventually result if considerable volumes of sand were not replaced. The COE has developed a plan whereby every 3 years sand will be dredged from



Masonboro Inlet and placed on the beach approximately 2,295 m. (3,000 ft.) south of the Masonboro Island jetty. This will replenish sand to the north end of the island and this sand will also move south in the longshore current.

e. Archaeological Resources

The North Carolina Division of Archives and History has determined that no significant archaeological sites are present on Masonboro Island (Oliver, 1984). However, several shipwrecks of Civil War age and more recent are located just offshore--outside the proposed sanctuary boundary (Mr. Richard Lawrence, personal communication of May 10, 1984, N.C. Dept. of Cultural Resources).

f. Research and Education

Research. Present research interest in Masonboro Island primarily centers around the faculty and students of UNC-W, located approximately 8 km. (5 mi.) northwest of the island. Appendix 9 documents the current interest in research among UNC-W staff and a local landscaper, plus excerpts of past publications pertaining to the island.

The Wilmington field office of the DMF, located 1.6 km. (1 mi.) from the north end of the island, has an existing census program of finfish and crustacean populations associated with the Masonboro Island estuary. This agency has designated all of the estuarine waters of Masonboro Island as a primary nursery area--where postlarval to very early juvenile development occurs. In addition, the division has several shellfish management areas in the estuary where very young oysters (oyster cultch to catch spat) or slow growing seed oysters are planted for public harvest. There are plans to maintain the existing management area and establish new ones (Carpenter, 1984).

A list of other marine science research institutions which may be potential users of Masonboro Island is found in Table 7. The MRC-Fort Fisher, located approximately 4.8 km. (3 miles) from Carolina Beach Inlet, has research space available for approved projects.

A program of future research priorities and policies in the proposed component is outlined in the Alternatives section of this Final Environmental Impact Statement and Draft Management Plan (FEIS/DMP). The program would emphasize baseline data accumulation, long-term environmental monitoring, ecosystem-level studies, and applied problems of coastal resource management.

The NESP would enhance coordination and communication in Masonboro Island research. A program setting priorities for certain types of estuarine research would encourage fuller and more efficient use of existing facilities, equipment and collections. Availability of existing data and its effective use would be enhanced and integrated into the Research and Education Information Coordination and Exchange Program (REICEP) presently being developed by the NESP. Aside from the research institutions mentioned above, there would be opportunities for involvement in certain types of research, such as observations on estuarine animals and plants, by sportsmen and naturalists.



Education. Four local educational programs regularly use Masonboro Island in their marine science curricula. Various biology classes at UNC-W utilize the site for field trips and projects. The Marine Science Program and Ocean Science Institute within New Hanover High School, located approximately 9.6 km. (6 mi.) northwest of the site, and Laney High School, situated 10.4 km. (6.5 mi.) northwest of the island, have various programs involving field trips to Masonboro Island.

Less frequent use of Masonboro Island for interpretive programs is made by local groups such as the Lower Cape Fear Bird Club, The Sierra Club, and UNC-W Biology Club. The educational program at the MRC-Fort Fisher also has occasional trips to the island for school groups and the public. See Table 7 for a list of potential users of the proposed component for education.

The proposed educational program is discussed in the Alternatives section of this FEIS/DMP. This program would be coordinated by a future memorandum of understanding with the MRC-Fort Fisher which has ideal facilities for off-site and on-site programs. The MRC has classroom space, aquariums, audio-visual aids, and exhibits pertinent to the contiguous coastal environments. An exhibit concerning the proposed Masonboro Island Component would be developed and maintained at the center. The activities and content of Masonboro Island field trips and programs would be developed jointly by the center's Educational Coordinator and the Estuarine Sanctuary Coordinator. The MRC also has boats for access to Masonboro Island.

Additional off-site activities would consist of slide programs given by the Sanctuary Coordinator and Sanctuary Analyst, and development of exhibits and brochures for school groups and the general public. The Educational Specialist of the University of North Carolina Sea Grant Program could also disseminate information concerning Masonboro Island.



Table 6. Some Institutions and Agencies that are  
Potential Research and Educational Users  
of the Proposed Masonboro Island Component.

<u>Institution or Agency</u>	<u>Type of Use</u>
Cape Fear Chapter of the Sierra Club Wilmington, NC	Education
Cape Fear Technical Institute Wilmington, NC	Education
Duke University Marine Laboratory Beaufort, NC	Research and Education
East Carolina University Greenville, NC	Research and Education
Hampton Mariners Museum Beaufort, NC	Education
Lower Cape Fear Bird Club Wilmington, NC	Education
National Marine Fisheries Laboratory Beaufort, NC	Research
New Hanover County Public Schools Wilmington, NC	Education
North Carolina Division of Marine Fisheries Wrightsville Beach, NC	Research
North Carolina Marine Resource Center at Fort Fisher Fort Fisher, NC	Education, Research facilities available
University of North Carolina Institute of Marine Sciences Morehead City, NC	Research
University of North Carolina at Wilmington Wilmington, NC	Research and Education



## PART IV: ENVIRONMENTAL CONSEQUENCES

### A. General Impacts

An acquisition and development award from the National Oceanic and Atmospheric Administration (NOAA) will enable the State of North Carolina to acquire privately-owned uplands and develop limited facilities (e.g., boat dock, boardwalk, trails). These land and facilities, combined with other lands already owned by the state, constitute a National Estuarine Sanctuary Component representative of an embayment estuarine type in the North Carolinas subdivision of the Carolinian biogeographic region. The sanctuary component designation will result in minimal impacts on existing uses or activities at the proposed site, and will provide greater protection of the associated sounds and salt marshes, and will improve the opportunities for coordinated research and education.

The most important overall effect will be better protection of areas included within the component from developmental pressures and improved access to wetlands and estuarine natural areas for research and educational purposes. The proposed addition to the North Carolina National Estuarine Sanctuary (NCNES) will require very little development; minimal change will occur to the existing natural environment. Sanctuary component status will not significantly affect current uses or activities in or near the Masonboro Island area.

The greatest environmental benefit of this component will be the long-term protection of the natural resources of the tidal wetlands, shallows, and uplands of Masonboro Island. The component will serve as an area for people to use for aesthetic and recreational enjoyment and for scientific and educational purposes. Information collected in the component will increase knowledge of East Coast estuarine ecosystems and provide an important link with existing National Estuarine Sanctuaries and other coastal research and educational reserves. The estuarine sanctuary component designation will complement and enhance existing research, educational, and ecological management programs. Including a representative of this type of estuary within the Carolinian biogeographic region would also improve understanding of estuarine species and processes peculiar to embayments with bar-bound structure along the Atlantic Coast.

The proposed addition of the Masonboro Component will have minimal adverse effects on the natural environment. An increased number of visitors to the site is anticipated. The sanctuary component management plan describes research and educational uses, traditional activities, and surveillance and enforcement. Research and educational uses will not damage the environment nor interfere with other uses of the sanctuary component. Traditional activities--fishing, hunting, beach use, hiking, and bird watching--will be maintained. Camping will be on a permit basis for special groups.



## B. Specific Impacts

### 1. Natural Environment

#### a. Fish and Wildlife Habitat

Many species of fish and wildlife, both resident and migratory, use the proposed sanctuary component site for feeding, reproduction, and other purposes. Establishment of this proposed component will ensure long-term protection of important fish and wildlife habitats including tidal wetlands, shallows, shorelines, and uplands. This protection of habitats will benefit endangered and threatened species including the brown pelican and loggerhead sea turtle as well as the other endangered, threatened, and special concern species discussed in the Affected Environment (Part III) section of this FEIS/DMP. Additional information on endangered, threatened, and special concern species is being collected to assist in developing a more detailed management plan for the Masonboro Island Component.

The Masonboro Component will have a positive impact by protecting high quality ecosystems in the Masonboro Island estuary. Increased visitor use of the component's sites for educational, recreational, and research purposes will have a minimal adverse effect on the value of the area as a fish and wildlife habitat. Beach use, hiking, and bird watching are not expected to increase greatly over levels anticipated without the designation of the proposed component, and fishing and hunting are expected to remain at present levels in areas where these activities are currently allowed. Existing state regulations protect fish and wildlife in those areas. The management plan for the Masonboro Component takes into account the protection of fish and wildlife habitats provided by cooperating state agencies responsible for regulating hunting and fishing.

#### b. Soils and Vegetation

Adverse impact on soils within the proposed component will be minimized by taking appropriate precautions. Trail construction will be largely confined to locations of former or existing trails, and poorly drained soils will be avoided. A simple boat dock and boardwalk over a small portion of the marsh and sound will be constructed after studies are made to determine the appropriate design and location to avoid degradation of soils, vegetation, or fish and wildlife habitats. A dock will facilitate access to the site and a boardwalk will allow visitors and researchers to experience wetland habitats with minimal environmental effects. The impacts of any construction activities will be assessed and appropriate permits obtained.

Vegetation will not be significantly altered by establishing the proposed component. Visitors generally walk along the beach and cause no impacts on local flora. Sanctuary component programs, such as research and education, will provide increased opportunities to monitor those human activities that damage the environment; for example, trampling of dune and marsh grasses.



### c. Water Quality

Establishing the Masonboro Island Component will prevent potential from water pollution that might otherwise occur due to residential development within the proposed component. Vigilance associated with research and educational activities will speed detection and clean-up of any pollution incidents that might occur.

## 2. Human Environment

### a. Residents of the Towns and County

There are no residences on Masonboro Island and thus no displacement of inhabitants will result. The public has access to the island by private boat, and the establishment of the proposed component will benefit people by protecting existing access. Assessments of properties across the Atlantic Intracoastal Waterway (AIWW) and inlets from Masonboro Island will not change as a result of component establishment.

The proposed component will help preserve Masonboro Island's undisturbed scenic beauty that attracts numerous local residents and tourists for recreational purposes. Research and educational activities associated with an estuarine sanctuary component will contribute to local economics: users of the sanctuary will require transportation, housing, food, and supplies from area merchants.

Establishment of a Masonboro Island Component will encourage a more thorough examination and understanding of the relationships between human activities and the environment. There will be increased public knowledge and awareness of natural resources, ecosystems, sensitivities, and conservation needs. The proposed sanctuary component will increase the support for and public understanding of coastal management programs and activities.

Residents will benefit from long-term protection of sport and commercial fishing and hunting by protection of the estuary. The impacts of these activities will remain unchanged. The integrity of fish and wildlife habitats and populations will be protected by preserving the natural areas of the proposed sanctuary component from adverse development. Protection of water and habitat quality and improvements in the quality of fishing and hunting will go hand-in-hand. Furthermore, increased research resulting from component establishment will very probably result in better management of fish and wildlife populations and their habitats within the entire Masonboro Island estuary.

### b. Scientific and Educational

Existing research and educational programs will be enhanced by establishment of the Masonboro Component, and additional research and educational activities will be developed by involvement of



other institutions and agencies in the state. There will be increased coordination and improved effectiveness of the present programs concerning the estuary, especially research on the wetlands and shallows. Protection of high-quality natural ecosystems and coordinated management will allow school groups and the general public of all ages use of the site for educational and scientific resources. The designation will be a definite advantage to scientists and students of science as a site for long-term environmental monitoring, ecological research, and work on coastal resource management problems.

c. State and Federal

Establishment of the Masonboro Island component will protect a natural area for enjoyment, use for research, education, and other traditional recreational activities. The sanctuary component designation will benefit people from the coastal towns who have difficulty finding undisturbed barrier island areas for these activities.

Establishment and management of the proposed component will have a relatively slight and short-term financial impact on the Federal government. Because long-term operation of the proposed component will be based on retention of its natural features, expenditures will be minimal. All facilities will be designed for minimal maintenance. Volunteer efforts will be solicited to assist in the upkeep and management of the interpretive trail and other features of the component. Sanctuary component programs will be closely coordinated with other governmental programs and private programs of research, education, and conservation.

Sanctuary component goals will be compatible with the protection of wetlands, shorelines, and other estuarine environments in accordance with Executive Orders 11988 and 11990, the Coastal Area Management Act of 1974, and other applicable Federal and State laws.

The United States Department of Defense and the U.S. Coast Guard will not be prohibited from conducting any activity that is essential for national defense or because of emergency. This includes military flights above or in the vicinity of the proposed sanctuary component site. Such activities shall be conducted in a manner consistent with sanctuary regulations, to the maximum extent practicable.

C. Unavoidable Adverse Environmental or Socioeconomic Effects

There are no adverse environmental effects associated with this proposed action. Of the alternatives already identified, only the Preferred Alternative will create an estuarine sanctuary component for research and education that includes all the key land and water components of a natural estuarine unit. Both boundary alternatives will result in some loss of sanctuary component integrity. In regard to Alternative I -- inclusion of the north or south half of the island-- the potential development that will occur on either end of the island will result in the loss of upland habitats (e.g., dunes, shrub thicket) and



deterioration of estuarine water quality by the introduction of leachate from septic fields. Similar but more extensive impacts will occur if the component consisted of just the island area west of a north-south axis running through the points of greatest elevation on the barrier (Alternative II). In this case, the potential for development will exist along the entire island frontage, but will most likely occur at the north and south ends where the sandy barrier is widest. If the No Action Alternative is chosen, the net benefits presented in the proposal will be eliminated and private residential development will occur.

Unavoidable adverse economic effects will include the loss of tax revenue to New Hanover County if the proposed land acquisition takes place. According to the Office of Tax Administration for New Hanover County, the total potential loss of property tax revenues is estimated at \$1,624.88 per year. Some or all of this lost tax revenue will be offset by increased spending by visitors, scientists, and educators. Some of this tax loss may also be reduced by using less than fee-simple acquisition of property rights such as purchase of development rights, conservation easements, or reserved life estates.

Establishment of the Masonboro Component may result in minor disturbances to the environment through the construction of a boat dock, boardwalk, and interpretive trails. Any proposed construction in wetland areas will be accomplished with minimum unacceptable environmental/ecological impacts.

D. Relationship between Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

Sanctuary component designation will provide long-term assurance that the natural resources and resulting benefits of the area are available for future use and enjoyment. Without sanctuary component designation, intensive use such as residential development are expected in some parts of the proposed component resulting in a loss of ecological benefits due to disruption and degradation of natural resources.

Research information collected from the proposed estuarine sanctuary component over the long-term will assist federal, state, and local governments in making better coastal management decisions. Better management will in turn help resolve use conflicts and mitigate adverse impacts of human activities in the coastal zone, saving both money and resources. Research in the proposed estuarine sanctuary component might well allow more efficient and safer use of resources in the coastal zone, and this research may also result in the discovery of previously unknown resources (medical, nutritional, esthetic, recreational) for human use. A public education program will provide a grassroots foundation for wise public use of estuarine resources.



#### E. Irreversible or Irretrievable Commitment of Resources

Within the proposed component, there are no resources that will be irreversibly or irretrievably lost. The intent of the proposed action is to protect, enhance, and manage the natural resources for research, education, and recreation. If these resources are protected and managed instead of altered, they will be available for future use. It is also believed that establishment of the proposed component will insure the future harvest by commercial and sport fishermen and also hunters through scientific research and proper management of resources, without resulting in loss of other potential benefits such as nonconsumptive enjoyment of the resource.

#### F. Possible Conflicts between the Proposed Action and the Objectives of Federal, State, Regional and Local Land Use Plans, Policies and Controls for the Areas Concerned

No conflicts are anticipated between this proposed action and the objectives of federal, state, regional or local land use plans, policies, and controls for the area concerned.

##### 1. Federal and Regional Plans

The establishment of the proposed Masonboro Island Component in and of itself will not interfere with the U.S. Coast Guard activities and enforcement of the U.S. Coast Guard rules and regulations. The proposed sanctuary will not interfere with AIWW use nor U.S. Army Corps of Engineers (COE) maintenance of the AIWW and Masonboro Inlet jetty. The proposed sanctuary site is adjacent to one area where the COE will periodically dispose of spoil: beach disposal on the COE property at the northern end of the island as a result of dredging Masonboro Inlet.

Two areas receiving dredge spoil will be included within the Masonboro Island Component's boundary: 1) the existing diked sites within the COE's AIWW easement receiving sound-side spoil disposal as a result of routine maintenance dredging, and 2) the south end of the island, which receives periodic surf-zone deposition from the maintenance dredging of the Carolina Beach Inlet. The cooperative management plan to be developed between the COE, OCM, and NESP will minimize conflicts in these areas.

Sanctuary component management policies will not interfere with existing regulations of the U.S. Fish and Wildlife Service, National Marine Fisheries Service, or any other federal regulatory agency.

##### 2. State Plans

The purposes and objectives of the proposed estuarine sanctuary component are consistent with the programs of the Division of Parks and Recreation, Office of Marine Affairs, Office of Coastal Management, Division of Marine Fisheries, Wildlife Resources Commission, and Division of Archives and History. Representatives of these agencies will be asked to serve on the local advisory committee for the proposed component.



The proposed action is consistent with the Coastal Area Management Act of 1974 in that an Area of Environmental Concern, namely, the marsh-estuary area, will be protected within the Masonboro Island complex.

Proposed and potential estuarine sanctuary component research and education programs are complementary to, and will not interfere with, any research or education programs conducted by state agencies, or by private groups or schools. Indeed, sanctuary component programs and other research and education programs are mutually enhancing.

### 3. Local Plans

The proposed Masonboro Island Component will not interfere with any known county or town plans, policies, or regulations. The proposed component management plan will take into account all county and town laws and regulations governing portions of the proposed sanctuary component that lie within these political divisions. Protection of scenic, recreational, historic, and archaeological resources within the proposed component is consistent with local plans and policies as well as state policies. Existing uses of the proposed component will continue, including hunting, fishing, beach use, hiking, bird watching, and spoil deposition.

It is anticipated that the establishment of the proposed component will not interfere with existing or potential land or water uses across the waters of the two inlets or the AIWW. The majority of such land use is residential, single or multiple dwellings, or small-scale commercial enterprises such as stores or marinas. If problems arise, negotiated agreements will be sought.



## PART V: LIST OF PREPARERS

### Mr. John B. Taggart - - North Carolina Department of Natural Resources and Community Development

Mr. Taggart holds a B.S. degree in biology, a M.S. degree in botany, and is a Ph.D. candidate in botany. He is the coordinator of the North Carolina National Estuarine Sanctuary. His background includes serving as Environmental Research Specialist with the North Carolina Division of Parks and Recreation, Educational Assistant with the North Carolina Marine Resources Center at Fort Fisher, and Assistant Director of the Illinois Chapter of the Nature Conservancy.

His responsibilities in the preparation of the DEIS/DMP and FEIS/DMP included overall compilation of information, writing, and organization of the original document. Mr. Taggart had assistance from Ms. Deborah Crouse, who edited the manuscript, Ms. Jill Miller, Art and Illustration/OCM, who drew the figures, and Ms. Alma Pate, Clerk/Typist Word Processing Center/DNRCD, who typed the manuscript.

### Arthur E. Jeffers - - National Oceanic and Atmospheric Administration, National Ocean Service, Sanctuary Programs Division; Washington, D.C.

Mr. Jeffers has B.S. degrees in Natural Resource Management and in Secondary Education/Science and Environmental Studies. As the Sanctuary Project Manager he is responsible for providing overview and guidance in the designation, operation and management, and research activities associated with the National Estuarine Sanctuary Program. His background includes two (2) years experience in establishing and managing national marine and estuarine sanctuaries, three (3) years experience in working with coastal states in development and implementation of their coastal zone management programs and one (1) year in the conduct of management analyses for the Department of Defense.

Mr. Jeffers responsibilities in the preparation of the DEIS/DMP included overall direction, organization, and final review. He had assistance from Dr. Frank Hebard, Sanctuary Projects Manager, who worked directly with Mr. Taggart in editing the document and subsequent preparation of the DEIS/DMP and FEIS/DMP for publication. Dr. Hebard was assisted by Ms. Gloria Thompson, Program Specialist; Ms. Sherrard Coleman-Foster, Program Specialist; and Ms. Glenda McKiver, Clerk-Typist.

Comments were received from the following North Carolina Office of Coastal Management staff members:

Steve Benton  
Melissa McCullough  
David Owens  
Daniel Small  
Geoffrey Willett



In addition, the following individuals provided valuable information or assistance:

William Adams (U.S. Army Corps of Engineers)  
Richard Carpenter (N.C. Division of Marine Fisheries)  
Edith Friedberg (Society for Masonboro Island)  
Karen Gottovi (New Hanover County Commissioners)  
Courtney Hackney (UNC-W)  
Berry Holliday (U.S. Army Corps of Engineers)  
Donald Kapraun (UNC-W)  
James Lanier (Marine Resources Center at Fort Fisher)  
Anne McCrary (UNC-W)  
James Parnell (UNC-W)  
William Raney (Society for Masonboro Island)  
James Stevens (N.C. Division of Parks and Recreation)  
James Wells (U.S. Army Corps of Engineers)  
Katy West (N.C. Division of Marine Fisheries)  
Sally Zimmerman (Marine Resources Center at Fort Fisher)



PART VI: LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS  
RECEIVING COPIES

Federal Agencies

Advisory Council of Historic Preservation  
Department of Agriculture  
Department of Commerce  
Department of Defense  
Department of Energy  
Department of Health and Human Services  
Department of the Interior  
Department of Justice  
Department of Labor  
Department of Transportation - U.S. Coast Guard  
Environmental Protection Agency  
Federal Energy Regulatory Commission  
General Services Administration  
Nuclear Regulatory Commission  
U.S. Army Corps of Engineers - Wilmington District

National Interest Groups (these groups commented on the DEIS/DMP)

National Audubon Society  
Sierra Club

North Carolina Agencies and Organizations

N.C. Department of Administration  
N.C. Department of Agriculture  
N.C. Department of Commerce  
N.C. Department of Crime Control and Public Safety  
N.C. Department of Cultural Resources  
N.C. Department of Education  
N.C. Department of Human Resources  
N.C. Department of Natural Resources and Community Development  
N.C. Department of Transportation  
North Carolina Nature Conservancy  
North Carolina Chapter of the Sierra Club  
Conservation Council of North Carolina  
North Carolina Wildlife Federation  
The Coastal Federation  
The Raleigh Salt Water Fishing Club  
Friends Of State Parks  
The University of North Carolina Sea Grant College Program  
North Carolina Audubon Council

Congressional Seantors

The Honorable Jesse Helms  
The Honorable John P. East



### Representatives

The Honorable Walter B. Jones  
The Honorable I.T. (Tim) Valentine, Jr.  
The Honorable Charles O. Whitley  
The Honorable Ike F. Andrews  
The Honorable Stephen L. Neal  
The Honorable Robin Britt  
The Honorable Charlie Rose  
The Honorable W. G. (Bill) Hefner  
The Honorable James G. Martin  
The Honorable James T. Broyhill  
The Honorable James McClure Clarke

### North Carolina Legislators

The Honorable James Hunt, Governor  
The Honorable Gerald L. Anderson  
The Honorable Chris S. Barker  
The Honorable Howard B. Chapin  
The Honorable Melvin R. Daniels  
The Honorable Charles D. Evans  
The Honorable Bruce W. Ethridge  
The Honorable Malcolm G. Fulcher  
The Honorable John B. Gillam III  
The Honorable A. D. Guy  
The Honorable Vernon G. James  
The Honorable Harry E. Payne  
The Honorable David E. Redwine  
The Honorable Thomas E. Rhodes  
The Honorable R. C. Soles, Jr.  
The Honorable Joseph Thomas  
The Honorable Paul J. Tyndall  
The Honorable J.A. Wright  
The Honorable Richard Wright

### Local Agencies and Organizations

Cape Fear Council of Governments  
New Hanover County Commissioners  
New Hanover County Planning Department  
City of Wilmington  
Town of Carolina Beach  
Town of Kure Beach  
Town of Wrightsville Beach  
Carolina Beach State Park  
N.C. Marine Resources Center at Fort Fisher  
Cape Fear Chapter of the Sierra Club  
Lower Cape Fear Bird Club  
University of North Carolina at Wilmington  
Local Chapter of the N.C. Wildlife Federation  
Society for Masonboro Island  
New Hanover County Crossroads  
Advisory Services  
Raleigh Saltwater Sportfishing Club  
Wilmington - New Hanover Port, Water , & Beach Commission



### Individuals and Landowners

Amos, Elizabeth  
Annand, Barbara & Michael  
Ansell, Ray H.  
Armstrong, Debbie

Baggett, Evelyn McCall  
Bair, George E.  
Baltzergar, Kathryn L.  
Bates, John  
Bates, Vivian K.  
Bayzle, Phyllis K.  
Beard, Cathy  
Bedfears, Christy  
Beegle, L.W. & Cynthia L.  
Beele, Charles & Rebecca  
Begor, Virginia H.  
Bellamy, E. H.  
Bender, Brooker T.  
Benton, David, Mr. & Mrs.  
Blackledge, J. H.; Heirs  
Bland, Terry  
Block, Peggy  
Boinear, Coleman  
Brouse, Vera P.  
Broussard, Vincent R.  
Brupe, Steven  
Bryan, Katherine H.; et al.  
Buchanan, Lynda  
Burnett, Hannie I.  
Burnett, Richard, Jr.; Etux  
Byrd, Alan

Cage, Mary Cox  
Cameron, Lottie F.  
Capra, Jr., Frank  
Cappo, Betty, Mrs.  
Carr, James D.; Etux, Et al.  
Carter, Beth  
Cheatham, Charles  
Chester, Karen  
Christensen, Mrs. John P.  
Clough, Alberta S.  
Clybern, Lee  
Connett, Virginia V.  
Cook, Delores & Woody  
Cooper, Jim  
Corcoran, Linda M.  
Cottle, Jr., Loranzo B.  
Craddock, Gail  
Craig, Nora C.

Coggin, Amy  
Coggin, James D.  
Cotton, Mrs. Horace  
Crossley, John F.

Davis, Bennie F.  
Davis, James H.  
Dermid, Jack  
Diefenback, Leroy  
Dreyfors, John M.  
Dunn, Larry  
Durrance, Julia Vickers

Ensign, Janet & John  
Evans, Alice Howell

Fales, A. F.; Heirs  
Fales, Carl L., Jr.  
Fales, Clara H.  
Fales, Maggie H.  
Fales, R. M.  
Federal Point Property  
Ferber, James & Dora  
Finch, Robert A.  
Flake, Alma H.  
Flanagan, Troy & Elizabeth  
Freeman, R. B.; Heirs  
Friedberg, Edith  
Funderburg, Claire  
Futch, James; Heirs

Gaines, Simons; et al.  
Gennmen Family  
Getz, Donald, Judith & Family  
Gottovi, Karen  
Goldsboro Eye Clinic  
Granger, John A. V.  
Gwathney, Jr., Richard B.

Hackney, Courtney  
Hall, Alex M.  
Hall, Eunice B.  
Hammond, S.V., Mrs.  
Harriss, Jr., Meares  
Hart, Jack F.  
Hauck, Dorothy Fales  
Hervy, David Mrs.  
Herz, Ralph; Jr.  
Hewlett, Addison; Sr; Heirs  
Hewlett, Elijah O.; Heirs; et al.  
Hewlett, Irvin  
Hewlett, Leslie P.; Etux; et al.



Hicks, Charles M.  
 Hicks, Mr. & Mrs. E. C., Jr.  
 Hicks, John R.  
 Hill, Ruth Foell  
 Hines, Ira A., Etux  
 Hines, Katie B.  
 Hoffman, Bill  
 Hollis, Annie O.; Heirs  
 Hollis, Elijah W.; Etux  
 Hollis, J. R.; etux  
 Hollis, J. W.  
 Holloway, David S.  
 Holton, Delaney H.; Heirs  
 Hunst, Adriene  
 Hurst, Adrian D.  
  
 Irvine, John M.  
  
 Jamieson, Bob  
 Jerome, Katherine B.  
 Jones, Myra M.  
  
 Kay, Sue  
 Kesk, Ketty  
 Kilpatrick, David J.; Heirs, et al.  
  
 Levans, Ann  
 Lewis, Brian J.  
 Lewis, Trandy E.  
 Liggett, Gary L.  
 Lilley, Dixie  
 Long, Mr. & Mrs. William  
 Long, Vicky Coggin  
  
 MacIntosh, Martha  
 Marrett, Linda D.  
 Mason, David P.  
 Mason, Phyllis F.  
 Mayes, Carol  
 McCrary, Anne B.  
 McEachern, A. A.; et al.  
 McLean, Rick  
 McMillan, Florence J.  
 McPhail, Florence J.  
 McQuillan, Ivan  
 Metts, John Van B.  
 Mims, Mrs. Nelleen C.  
 Mincey, R. Michael  
 Montgomery, Josie  
 Murray, Florence  
 Musser, Ben F.

Newton, Thomas W.; Heirs  
  
 Ogbury, Finger  
 Old, Mrs. Kenneth  
 Oliver, David  
 O'Neal, Nolan  
  
 Parmele, Inc.; T. H. Wright, et al.  
 Parnell, James F.  
  
 Parr, Pamela Payton  
 Parr, Robert A.  
 Parsons, Lee  
 Paul, Charles  
 Peppard, Ben  
 Peschau, Henry B.; Jr.  
 Pfeffer, Dr. Suzanne  
 Pfeffer, Daniel L.  
 Pole, Mrs. D.T.  
 Porter, L. W.  
 Powell, Phyllis S.  
 Price, James A., Jr.  
 Pridemare, Joyce  
 Pridgen, Marty  
  
 Randt, Jon & Scott  
 Ravelle, Gillie S.  
 Raney, Jr., Bill  
 Reddick, Sue  
 Reid, James S.  
 Richardson, S.W.  
 Robinson Louise Howell  
 Rogers, Dudley; Sr.  
 Rogers, Roger Lee  
 Rupert, Marily & Fred  
  
 Saffo, Cathrine G.  
 Sanford, L.T., Jr.  
 Satterfield, Callie  
 Saunders, Harriet L.  
 Sause, George L.  
 Schaffer, Todd M.  
 Schott, Lola  
 Scott, Andy & Nancy  
 Sharp, Mr. & Mrs. Rex E.  
 Shuford, Scott  
 Simmons, Gaines  
 Simmons, Holland C.  
 Smallman, Georgia  
 Smith, Beth W.  
 Snyder, Frank B.  
 Souse, Karen  
 Southerland, Sammuel, Jr.; Etux.  
 Spalt, Allen  
 Spalt, Danny



Spalt, Ellen F.  
Spalt, Elizabeth  
Stehman, Charles  
Sternberger, Frederick B.  
Strickland, Mrs. H.S.  
Sturgis, Kim  
Swan, Edward  
Swindell, Lottie C.  
Sumenal, James

Thompson, Jackie & Bob  
Tilley, Charles  
Tompkins, David  
Trainum, C.D.  
Trotman, William Holt

Umstead, Louise

Wachovia Bank & Trust Co.  
Wade, Allene S.  
Wagner, William F.  
Wagoner, William H.  
Walton, Herman, et al.  
Watts, Evan  
Wentz, Peter W.  
Wessell, J.C., Jr.  
Whittier, Mrs. G.  
Whitlock, Mrs. U.O.  
Whittled, Joseph W.  
Widenhouse, Gary E.  
Willard, Elizabeth  
Willard, Mr. & Mrs. Emarson  
Willard, Mr. & Mrs. Martin  
Willey, Alice C.  
Willey, Guy F.  
Willey, Joan D.  
Winborne, Mrs. Mary R.  
Woody, Grace D.  
Worth, Ruth  
Wright, I.C.

Yonstead, Eugene  
Younghans, John M.



PART VII: WRITTEN AND VERBAL COMMENTS RECEIVED ON THE MASONBORO ISLAND  
COMPONENT OF THE NORTH CAROLINA NATIONAL ESTUARINE SANCTUARY  
DRAFT ENVIRONMENTAL IMPACT STATEMENT AND DRAFT MANAGEMENT PLAN,  
AND NOAA RESPONSES

This section presents the written and verbal comments received on the Draft Environmental Impact Statement and Draft Management Plan (DEIS/DMP) and when necessary provides NOAA responses to questions or concerns raised by these comments. Generally, responses are made in one or more of the following ways:

1. Expansion, clarification, or revision of the DEIS/DMP,
2. Specific responses to the individual comments made by each reviewer,

The comments received and responses, when appropriate, are arranged in the following order:

Section A: Responses to Comments by Speakers at Public Hearing  
and List of Speakers

Section B: Written Comments and NOAA's Responses

1. Federal Agencies
2. State and Local Governments
3. Environmental Organizations
4. Research Organizations
5. Local Business
6. Property Owners
7. Sportfishing Groups

Section C: Written Comments; No Response Necessary

Comments submitted by private individuals in support of the designation of Masonboro Island as a component of the North Carolina National Estuarine Sanctuary and requiring no response are presented in this Section.

The Public Hearing on the DEIS/DMP was held on August 22, 1984 in Wilmington, North Carolina at the Kenan Auditorium, University of North Carolina-Wilmington. The meeting was attended by approximately 350 individuals with 30 making verbal comments. A transcript of the statements by the speakers at the Public Hearing has been made and is on file with NOAA/SPD. This record is available for examination at:

Office of Ocean and Coastal Resource Management  
Sanctuary Programs Division  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

For the convenience of the reader, all comments appear on the left side of the page and corresponding responses appear on the right side of the page.



A transcript of the statements by the speakers at the Public Hearing has been made and is on file with NOAA/SPD. This record is available for examination at:

Office of Ocean and Coastal Reserach Management  
Sanctuary Programs Division  
3300 Whitehaven Street, NW  
Washington, D.C

For the convenience of the reader, all comments appear on the left side of the page and corresponding responses appear on the right side of the page.



PART VII  
Section A  
COMMENTS AND RESPONSES  
PUBLIC HEARING



LOCATION: Kenan Auditorium  
University of North Carolina-Wilmington  
Wilmington, North Carolina

DATE: August 22, 1984  
7:00 p.m.

ATTENDANCE: Approximately 350; 30 speakers

#### SPEAKERS WITH COMMENTS REQUIRING RESPONSE

1. Mr. Bill Raney; Society for Masonboro Island

<u>Comments</u>	<u>Response</u>
a. Highest priority should be the acquisition of adequate land for designation of the sanctuary	Comments on acquisition priorities noted and accepted
b. Construct proposed facilities after land acquisition has been completed and sanctuary is in operation	Comments on construction schedule versus acquisition noted and accepted
c. Traditional hunting and fishing used should continue as regulated as stated in the DEIS/DMP	Comments noted and accepted
d. Off-road vehicles, including three-wheelers, should be banned	Off-road vehicles will be banned except under conditions as presented in the FEIS/DMP Part II. A.3.f

2. Mr. S. W. Richardson; Land Owner

a. Because research takes precedence in the purposes of the sanctaury, the island may become off-limits to the public for recreational use	Management policies allow for low-intensity recreational uses and for traditional hunting and fishing (Please see Part II, A.3.)
b. I do not trust committees, must less committees made up of committees	<p>The function and membership of the Local Advisory Committee are described in Part II, A.3.b.</p> <p>The Committee will include representatives of the land owners and other users, and will advise the NCNES Manager on matters involving conflicts between user groups</p>



3. Charles Paul; Commercial Realty Co./Society for Mansonboro Island

- a. Interested in seeing that the  
land owners are properly  
compensated

Part II, A.1. of the FEIS describes the procedures for acquisition. These procedures include a requirement for an independent appraisal to determine the fair market value of the property concerned. An independent appraisal must be obtained when land is to be acquired under any arrangement, including donation, conservation easement, or other less-than-fee-simple techniques.

SPEAKERS SUPPORTING THE PROPOSED ACTION - NO RESPONSE NECESSARY

Cathrine Saffo  
Phyllis Bayzle  
Edith Friedberg  
Claire Fonderburg  
John Bates  
Carol Mayes  
John Dreyfors  
Jack Hart  
Frederick Sternburger  
Rick McLean  
Georgia Smallman  
Jan Sumarel  
Ben Peppard  
Adrian Hurst

Karen Gottovi  
Nolan O'Neal  
Larry Dunnn  
Ginger Ogburn  
Bob Jamison  
Lee Parsons  
Lorenzo Cottle, Jr.  
Gene Floyd  
Meares Harriss, Jr.  
Alex Hall  
Kitty Kosh  
Jack Dermid  
Leroy Diefenback



PART VII  
Section B

Comments and Responses

1. Federal Agencies
2. State and Local Governments
3. Environmental Organizations
4. Research Organizations
5. Local Business
6. Property Owners
7. Sportfishing Groups



## **COMMENTS AND RESPONSES**

### **1. FEDERAL AGENCIES**





UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
ENDANGERED SPECIES FIELD STATION  
100 OTIS STREET, ROOM 224  
ASHEVILLE, NORTH CAROLINA 28801

July 9, 1984

Mr. John Taggart  
Estuarine Sanctuary Coordinator  
North Carolina Department of Natural  
Resources and Community Development  
P.O. Box 27687  
Raleigh, North Carolina 27611-7687

Re: 4-2-84-469

Dear Mr. Taggart:

We have reviewed the proposed acquisition of an estuarine sanctuary at Masonboro Island in New Hanover County, North Carolina, submitted June 13, 1984, for potential effects on endangered and threatened species.

Based upon information provided in your letter and your telephone conversation with Nora Murdock of my staff, we concur with the conclusion of the Endangered Species Act have been satisfied. However, obligations under Section 7 of the Act must be reconsidered if (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner which was not considered in this biological assessment, or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

Your interest and initiative in enhancing endangered and threatened species is appreciated.

Sincerely yours,

*Walter T. Parker*

Warren T. Parker  
Field Supervisor

CC: Mr. Stuart Critcher, North Carolina Wildlife Resources Commission,  
Raleigh, NC  
Director, North Carolina Natural Heritage Program, Raleigh, NC  
Field Supervisor, ES, FWS, Raleigh, NC  
U.S. Department of Commerce, National Oceanic and Atmospheric Administration,  
Rockville, MD 20852

1.1.1. Comment noted; no response necessary

1.1.1.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

AUG 23 1984

4PM-EA/CJD

Dr. Nancy Foster, Chief  
Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Dr. Foster:

We have reviewed the Draft Environmental Impact Statement and Draft Management Plan on the North Carolina National Estuarine Sanctuary, Masonboro Island Component.

Based upon our review, we support the proposal to include Masonboro Island as part of the North Carolina National Estuarine Sanctuary System. Managing the area as part of the System will protect it from development and will help to preserve the natural environmental features of the Island. Therefore, we assign a rating of LO-2, i.e., we have no objections to the proposal as presented, however, we request that a copy of the proposed Memorandum of Understanding between Carolina Beach State Park, the Marine Resources Center at Fort Fisher, and the University of North Carolina at Wilmington and the North Carolina Office of Coastal Management be included in the Final EIS.

1.2.1

1.2.1 Only preliminary discussions have been conducted with these groups. Detailed memoranda of understanding will be developed and included in the final management plan for the Masonboro Island component of the North Carolina National Estuarine Sanctuary. A copy of the final management plan will be forwarded to the U.S. Environmental Protection Agency, Region IV.

If you wish additional discussion on this subject, Ms. Clara J. DeLay, FTS 257-7901, of my staff, is the point of contact.

Sincerely yours,

*Sheppard N. Moore*

Sheppard N. Moore, Chief  
Environmental Review Section  
Environmental Assessment Branch

cc: Joyce M.T. Wood, Chief  
Ecology & Conservation Division  
U.S. Department of Commerce





DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control  
Atlanta GA 30333  
August 28, 1984

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Dr. Foster:

We have reviewed the Draft Environmental Impact Statement (EIS) for Masonboro Island Component, North Carolina National Estuarine Sanctuary. We are responding on behalf of the U.S. Public Health Service.

No mention was made of any environmental impact of this project on mosquito or other vector breeding. Of particular interest would be the placement of spoil material by the Army Corps of Engineers. Experience has shown that mosquito habitats are often created when dredged spoil material is improperly graded and drained. Mitigation of mosquito production needs to be addressed, including current and potential mosquito vector problems and anticipated control measures.

Since one of the planned uses for this area is beach use, the Final EIS should indicate the number and type of sanitation facilities that will be provided.

1.3.3. Who will be responsible for the maintenance of these facilities? What provisions will be made for potable water? What will be the source for this water, what type of treatment will it receive, and what type of disinfection will be provided? In the event that camping is permitted, will this water supply and the sanitation facilities be shared with beach users? If not, please also provide this information for the camping areas.

Thank you for the opportunity to review this Draft EIS. Please send us a copy of the Final EIS when it becomes available. Should you have any questions about these comments, please contact Mr. Lee Tate at FTS 236-4161.

Sincerely yours,

Stephen Margolis, Ph.D.  
Chief, Environmental Affairs Group  
Environmental Health Services Division  
Center for Environmental Health

- 1.3.1 We have checked with the North Carolina Department of Human Resources (telephone, Aug. 10, 1984). They are unaware of any problems with mosquito or other vector breeding in the Masonboro area. Should this become a problem, DCM will consult with NCDCR concerning control measures.
- 1.3.2 Should a decision be made to establish Masonboro Island as a national estuarine sanctuary, NOAA/SPD, the State of North Carolina and the COE have agreed to develop a Memorandum of Understanding that will include an agreement that the COE will work with NOAA/SPD and the State in ensuring that the disposal of dredged materials will be conducted in a manner that will minimize any potential adverse changes in the estuarine sanctuary. This will include use of disposal techniques that prevent mosquito and vector breeding potential. See Part II.3.f.IV.
- 1.3.3 Traditional low-intensity recreation and interpretive activities are generally encouraged in national estuarine sanctuaries to the extent compatible with the sanctuary's character as a natural field laboratory. At present, water supplies and sanitation facilities, however, are not considered appropriate or necessary for the low-intensity short-term recreational and interpretive activities planned for Masonboro Island as a part of the NCNES.
- 1.3.4 If established as a national estuarine Sanctuary, camping on Masonboro Island will be by permit only. The sanitation and water situation will remain as it is and has been traditionally (see response 1.3.3 above).





Commandant,  
United States Coast Guard

Washington, DC 20592  
Staff Symbol: G-MP-3  
Phone: (202) 426-2262

16477

4 SEP 1984

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, NW  
Washington, D. C. 20235

Dear Dr. Foster:

After reviewing the Draft Environmental Impact Statement (DEIS) for Masonboro Island, North Carolina Estuarine Sanctuary, we offer the following comments:

- 1.4.1 Page 76, "State and Federal", paragraph 4 should read: "The United States Department of Defense and the United States Coast Guard will not be prohibited..." 1.4.1 Comment accepted; DEIS text modified.
- 1.4.2 Page 78, 1. Federal and Regional Plans, paragraph 1 should read: "The establishment of the proposed Masonboro Island component in and of itself will not interfere with U. S. Coast Guard activities and enforcement of U. S. Coast Guard rules and regulations." 1.4.2 Comment accepted; DEIS text modified.

We appreciate the opportunity to review this Draft Environmental Impact Statement.

Sincerely,

J. G. SCHMIDTMAN  
Captain, U.S. Coast Guard  
Chief, Planning and Evaluation Staff  
By direction of the Commandant

Copy: Ms. Joyce M. T. Wood  
Chief, Ecology and Conservation Division  
Room 6111, U. S. Department of Commerce  
Washington, D. C. 20230





## United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

SEP 5 1984

ER 84/940

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Oceanic and Atmospheric  
Administration  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Dr. Foster:

This letter responds to your request for the Department of the Interior to review the draft environmental impact statement (DEIS) for the proposed addition of Masonboro Island, New Hanover County, North Carolina, as the fourth component of the North Carolina Estuarine Sanctuary.

### General Comments

Based upon our review, we believe that the DEIS adequately describes the potential impacts of the various alternatives, including the proposed action. We concur with the determination that, without the proposed action, Masonboro Island may become fully developed as a residential community. Any such development would, in our opinion, result in a significant adverse environmental impact and would eliminate the island's relatively pristine nature and associated value as an undeveloped coastal barrier island.

#### 1.5.1

1.5.1 Comment noted; no response necessary

### Coastal Barrier Resources Act Comments

Masonboro Island is within the Coastal Barrier Resources System as defined by the Coastal Barrier Resources Act (CBRA). As such, any expenditure of Federal funds for any purpose on the island is prohibited except as permitted in accordance with Section 6 of CBRA. We understand that it has been tentatively determined that the proposed action may be in accordance with Section 6 of CBRA and that formal consultation in this regard has been initiated with the Fish and Wildlife Service. Assuming that the consultation process required by CBRA will be completed prior to release of the final environmental impact statement, inclusion of a compliance statement and pertinent correspondence should be provided in that document.

#### 1.5.2

1.5.2 At the time this document went to print, we had not yet received a formal response to our correspondence submitted in accordance with the formal consultation requirements of the Coastal Barrier Resources Act.



Dr. Nancy Foster

2

Summary Comments

We commend your agency and the North Carolina Department of Natural Resources and Community Development, Office of Coastal Management for these efforts to preserve and protect the natural resources of Masonboro Island. Thank you for the opportunity to comment on this DEIS.

Sincerely,

  
Bruce Blanchard, Director  
Environmental Project Review





DEPARTMENT OF THE AIR FORCE  
REGIONAL CIVIL ENGINEER, EASTERN REGION (HQ AFESC)  
526 TITLE BUILDING, 30 PRYOR STREET, S.W.  
ATLANTA, GEORGIA 30303

REF: TO  
ATTN: OF

ROY2

4 September 1984

Draft Environmental Impact Statement (DEIS) Masonboro Island Component,  
North Carolina National Estuarine Sanctuary

TO: United States Department of Commerce  
National Oceanic and Atmospheric Administration  
Attn: Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, N.W.  
Washington, DC 20235

1. As the Air Force central point of contact for environmental planning in the eastern United States, we have been tasked by Headquarters Air Force to review and comment on the subject DEIS. Development of Masonboro Island as a component of the North Carolina National Estuarine Sanctuary system will not adversely impact Air Force operations in the project area. However, Air Force training operations in the area may result in a noise impact on the island. The Air Force currently operates a low-level flight training route VR-1074 in the vicinity of Masonboro Island. The route originates at Seymour Johnson AFB, NC and operates on a continuous basis. Altitudes involved range from less than 500 to 1500 feet above ground level. This is an established training route and within the scope of Department of Defense activities covered in paragraph 4, section c, page 76 of the DEIS.

1.6.1

1.6.1 Comments noted; no response necessary.

2. Thank you for the opportunity to review the DEIS. Please contact Mr. Winfred G. Dodson, FRS telephone 242-6821/6776, if you have any questions concerning our comments.

*Thomas D. Sims*  
THOMAS D. SIMS  
Chief

Environmental Planning Division

CC: HQ USAF/LEEV  
U.S. Dept of Commerce/  
Ms. Wood  
HQ TAC/DEEV  
4 CSG/DEEV



**COMMENTS AND RESPONSES**

**2. STATE AND LOCAL GOVERNMENTS**



# New Hanover County

## Board of Commissioners

### Resolution



WHEREAS the boundaries of Masonboro Island encompass sufficient land and water areas to approximate an ecological unit, and to ensure conservation; and

WHEREAS Masonboro Island represents a pristine, non-drowned river mouth estuary associated with an entire undisturbed barrier island and would be a unique component in the North Carolina National Estuarine Sanctuary Program; and

WHEREAS Masonboro Island has significant value as a scientific and educational laboratory for the University of North Carolina at Wilmington, the North Carolina Marine Resource Center and other educational institutions; and

WHEREAS Masonboro Island is dynamically unstable due to inlet migration and long-term erosion, which would endanger the establishment of permanent communities; and

WHEREAS Masonboro Island is unique on the North Carolina coast as a virtually untouched barrier island located within a major urban area; and

WHEREAS Masonboro Island includes economically and scientifically valuable primary shellfish and finfish nursery grounds; and

WHEREAS Masonboro Island is classified "Conservation" in the County Land Use Plan because of its environmental, scientific and recreational values; and

WHEREAS the provision of public services on undeveloped barrier islands would conflict with the County's Policies for Growth and Development, and would be prohibitively expensive when compared with service costs in other areas of the County; and

WHEREAS the preservation of Masonboro Island would be in harmony with the principles of the National Estuarine Sanctuary Program; and

WHEREAS the Draft Environmental Impact Statement for the National Estuarine Sanctuary Program has been found to be essentially complete, comprehensive, accurate, and objective;



2.1.1.1 NOW, THEREFORE, BE IT RESOLVED that the New Hanover County Board of Commissioners unanimously endorses the preferred alternative of adding all of Masonboro Island to the North Carolina National Estuarine Sanctuary Program, as analyzed in the Draft Environmental Impact Statement-Masonboro Island Component, and that the Office of Coastal Zone Management in the National Oceanic and Atmospheric Administration and the State of North Carolina are respectfully requested to continue in the process to designate and acquire Masonboro Island as an estuarine sanctuary.

2.1.1.1 Comment noted; no response necessary

Signed this 20th day of August, 1984.

  
Karen E. Gottowl  
Chairman

ATTEST:  
  
Lucile F. Smith, Clerk





WILMINGTON - NEW HANOVER  
PORT. WATERWAY AND BEACH COMMISSION

P. O. Box 330  
WILMINGTON, NORTH CAROLINA 28401  
(919) 762-2611

August 22, 1984

Mr. Dave Owens, Assistant Director  
N. C. Office of Coastal Management  
P. O. Box 27687  
Raleigh, N. C. 27611

Dear Mr. Owens:

The Wilmington-New Hanover Port, Waterway and Beach Commission in a regular meeting held at 4:00 P.M. yesterday afternoon in the offices of the Greater Wilmington Chamber of Commerce, unanimously endorsed the addition of Masonboro Island as the fourth component of the North Carolina National Estuarine Sanctuary.

2.2.1 Comment noted; no response necessary

2.2.1

The Commission, applauds the efforts of the Office of Coastal Management to preserve this valuable barrier island in its natural state. Considerable marine related research is currently being conducted on the island. The concept of The Marine Research and Development Crescent will be greatly enhanced by the possibility of using the island for research purposes.

Masonboro Island is a valuable asset that truly belongs to everyone. It should not fall prey to commercial development.

In the strongest way possible, we urge you to preserve Masonboro Island.

Thank you!

Sincerely,

  
John Van B. Metts, Jr.  
Chairman

JVB:vr

cc: Dr. Nancy Foster, Chief, Sanctuary Programs Division,  
National Ocean Service/NOAA, 3300 Whitehaven Street, NW,  
Washington, DC 20235  
Joyce M. T. Wood, Chief, Ecology and Conservation Division,  
Room 6111, U. S. Dept. of Commerce, Washington, DC 20230  
John Taggart, Director, N. C. National Estuarine Sanctuary,  
N. C. Office of Coastal Management, P. O. Box 27687, Raleigh,  
N. C. 27611



DEXTER L. HAYES  
PLANNING DIRECTOR

## PLANNING DEPARTMENT

NEW HANOVER COUNTY  
320 CHESTNUT STREET  
WILMINGTON, NORTH CAROLINA 28401

August 23 1984

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
Natural Ocean Service/NOA  
3300 Whitehaven St., NW  
Washington, DC 20235

RE: Comments on the DEIS for the proposed addition of the Masonboro  
Island Component to the North Carolina National Estuarine Sanctuary

Dear Dr. Foster:

The above referenced DEIS is accurate, comprehensive, and well done. We feel, however, that the description of support by the New Hanover County Board of Commissioners for the inclusion of Masonboro Island in the Sanctuary Program should be expanded with regard to the County's growth policies and land use regulations.

On August 1, 1983, the Commissioners declared a 90 day moratorium on building on undeveloped barrier islands in response to proposed development on Masonboro Island, and concurrently directed the Planning Department to prepare a Hurricane Protection Study. This study resulted in an amendment to the County Land Use Plan's Policies for Growth and Development that essentially prohibits 2.3.1 residential development on undeveloped barrier islands that do not have permanent access (Attachment 1). The Island was already classified Conservation in the County's Land Use Plan in recognition, at least partially, of its value in the estuarine system.

Furthermore, the County presently is preparing a Conservation Overlay District (COD) for the County Zoning Ordinance. This Overlay District, which will almost assuredly include Masonboro Island, will place restrictions on impervious surface areas, drainage, and require the preservation of certain sensitive environmental areas, such as primary nursery areas. The County also has passed subdivision regulations requiring hurricane evacuation planning, adequate boat facilities, and waterfront access on barrier islands (Attachment 2).

These land use policies and regulations are in addition to the County's offer to donate its 15.2 acres of land on Masonboro Island as a partial match for 2.3.3 obtaining Federal acquisition funds. The Board of Commissioners has also strongly supported the State in its efforts to secure funds for acquisition of the Island.

2.3.1 Comments noted; no response necessary

2.3.2 Comments noted; no response necessary

2.3.3 Comments noted; no response necessary





Dr. Nancy Foster

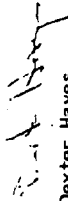
-2-

August 23, 1984

The County wholeheartedly endorses the present efforts to include Masonboro Island in the Estuarine Sanctuary program. We will be glad to provide further 2.3.4 comments as required.

2.3.4 Comments noted; no response necessary

Sincerely,



Dexter Hayes  
Planning Director

Enclosures

DH/glt





## Town of Carolina Beach

Drawer V  
Carolina Beach, N.C. 28428  
Telephone: (919) 458-8231  
August 31, 1984


Chief of the Sanctuary Programs  
Division  
Office of Ocean & Coastal Resource  
Management  
NOS/NOAA  
33 Whitehaven Street, N.W.  
Washington, DC 20235

Dear Sir or Madam:

Masonboro Island, an undeveloped coastal barrier island located between Carolina and Wrightsville Beaches (North Carolina), is under consideration by your office for grant funding to allow it to be purchased and designated as an estuarine sanctuary. Masonboro Island currently serves as a valuable wildlife habitat and fishery in an area of North Carolina that is experiencing considerable development. Allowing Masonboro Island to remain in its natural state would preserve an important aesthetic, economic, and educational resource for the future enjoyment of the citizens of North Carolina and the United States.

I urge you to act promptly and decisively on any grant application that would accomplish this goal. Thank you for any assistance you can provide in this matter.

Sincerely,

  
Scott Shuford  
Town Planner

SS/ln



2.4.1

2.4.1 Comments noted; no response necessary



We strongly support the establishment of this and other protected  
2.5.1 estuarine sanctuaries. We could possibly use such areas for basic, non-  
intrusive mosquito research. 2.5.1 Comments noted; text modified.

Although we do not know the precise potential of this area as a  
mosquito breeding site, its proximity to heavily populated resorts could  
lead to demands for mosquito control on the site. Techniques are available  
to control mosquitoes with no environmental problems. However, the question  
2.5.2 of "who pays" for the control may arise. If the state assumes management  
responsibility for the area, will it also assume responsibility for mosquito  
control? 2.5.2 Comments noted; text modified.

The forthcoming EIS should address this problem.

85-0008

NOTE: Comments provided by North Carolina Department of  
Human Resources





**Wildlife**  
Resources Commission

JUL 25 1984

ENVIRONMENTAL  
ASSESSMENT SECTION

Archdale Building, 512 N. Salisbury Street, Raleigh, North Carolina 27611, 919-733-3391

July 24, 1984

MEMORANDUM

TO: Melba McGee

SUBJECT: 85-0043-DEIS Estuarine Sancturay Program,  
Masonboro Island, New Hanover County, N. C.

Revise DEIS to read as follows:


Page 43, III Fishing and Hunting

Policy: Fishing, shellfishing, and hunting will  
be allowed to continue in the traditional manner, but  
will be regulated by state and local laws and by  
special regulations. ----

2.6.1

2.6.1 Comment noted; text has been  
modified to reflect recommendation.

TSC/lp

  
T. Stuart Critcher, Coordinator  
Habitat Conservation Section

J. Robert Gordon, Laurinburg  
Chairman

W. Vernon Bevil, Raleigh  
Executive Director

M. Woodrow Price, Gloucester  
Vice-Chairman

Richard W. Adams, M.D., Statesville  
David L. Allbrook, Scotland Neck  
C. W. Blaine, Jr., North Wilkesboro  
Edna C. Blaine, Jr., North Wilkesboro

Dan Robinson, Cullowhee  
Donald Allen Thompson, Mount Giles  
Jerry W. Wright, Jarvisburg



COMMENTS AND RESPONSES

3. ENVIRONMENTAL ORGANIZATIONS





# National Audubon Society

SOUTHEAST REGIONAL OFFICE  
POST OFFICE BOX 12M, CHARLESTON, S.C. 29402 (403) 732-6171

August 14, 1984

Dr. Nancy Foster, Chief  
Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street NW  
Washington, D.C. 20235

Dear Dr. Foster:

Thank you for providing us this opportunity to comment on the Draft Environmental Impact Statement (DEIS) and Draft Management Plan covering the Masonborough Island components inclusion into the North Carolina National Estuarine Sanctuary System.

The National Audubon Society supports the report's preferred alternative which proposes to acquire the entire Masonborough Island complex. As noted in the DEIS selection of this alternative will result in multiple benefits covering research, education, traditional uses and natural resource protection.

Selection of any alternative offered could result in the rapid degradation of both the Island and surrounding waters by development. The inappropriateness of this site for development is clear. For good reasons, county, state and federal regulations designed to prevent unwise, high risk development currently affect much of the Island.

Clearly then when benefits are weighed against risks the inclusion of the entire Masonborough Island complex into the North Carolina National Estuarine Sanctuary System is the best alternative.

Sincerely,

*Terrence*

Terrence C. Larimer  
Regional Representative

TCL:ph

cc: Joyce M. T. Wood, Chief, Ecology & Conservation Division

AMERICANS COMMITTED TO CONSERVATION  
Alabama Florida Georgia Mississippi North Carolina South Carolina

3.1.1 Comment noted; no response necessary

3.1.2 Comment noted; no response necessary

3.1.3 Comment noted; no response necessary





DEDICATED TO  
CONSERVATION

Grandfather Mountain Chapter  
NATIONAL AUDUBON SOCIETY  
LINCOLN, NORTH CAROLINA 28646

RUTH A. HAYNES  
PRESIDENT  
ROUTE 4 - BOX 479  
BOONE, N. C. 28607

August 19, 1984

Dr. Nancy Foster, Chief  
Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street NW  
Washington, D.C. 20235

Dear Dr. Foster:

The one hundred and ninety-one members of Grandfather Mountain Audubon Society strongly urge that Masonborough Island complex be included in the North Carolina National Estuarine Sanctuary System. Such an area is needed for future generations to enjoy as a remnant of the former chain of barrier islands as well as a unique research opportunity for the study of native flora and fauna. There are too many islands in the Carolinas that have allowed construction and destruction where one bad storm will cause such havoc that the costs to the state will make us wonder if the taxes collected are enough to make it financially feasible. We cannot afford to continue to cater to the greed of a few developers who are chasing the "fast buck".

We will be very interested to learn the result of your study and decision. Please inform us promptly.

Sincerely,

*Ruth A. Haynes*

Ruth A. Haynes

cc: State of North Carolina- D N R  
Joyce M. T. Wood, Chief, Ecology & Conservation Division  
Terrence C. Larimer, National Audubon Society, Charleston, S.C.

3.2.1

3.2.1 Comments noted: no response necessary





SIERRA CLUB  CAPE FEAR GROUP

... To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness ...

29 August 1984

Dr. Nancy Foster  
Chief, Sanctuaries Programs Division  
NOS/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Dr. Foster:

In addition to the comments that the Cape Fear Group of the Sierra Club gave at the public hearing in Wilmington, N.C. on 22 August 1984, we would like to have the following concerns known:

We have concerns regarding the proposed construction of the boat dock and boardwalk on Masonboro Island. We are not opposed to the construction of these facilities; however, we realize that these structures are going to encourage and increase the usage of the island particularly in the areas where these are placed. Therefore, we feel that the sites where these facilities are placed should be examined closely, as well as the timing of this construction. As we are sure that you are well aware, the north end of Masonboro is the most utilized area for colonial bird nesting. We fear that an increase in human activity in this area during the spring and summer months would be disturbing

3.3.1 Areas designated for on-site activities will be chosen, and facilities constructed in areas best suited for public access in order to minimize disturbance of habitat, wildlife or research sites. Selection will be based on habitat surveys and the advice of experts. (See Part II, A.3.e.1.)



and harmful to these birds that are currently listed as "Special Concern" in North Carolina.

We would like to be a part of the planning process of these projects, and we would also like a copy of the proposed construction of these facilities if one has been drafted

Thank you for your interest in our concerns and comments.

Sincerely,

Ginger Ogburn  
Conservation Chair  
Cape Fear Chapter - Sierra Club  
2237 Apt P. Wrightsville Ave.  
Wilmington, N.C.  
28403

3.3.2

The planning for the placement and design of facilities with the sanctuary will be conducted in cooperation with the Local Sanctuary Advisory Committee. If you are interested in participating with the Local Sanctuary Advisory Committee, you should indicate your interest to: Director, North Carolina Department of Natural Resources and Community Development; Raleigh, N.C.



**COMMENTS AND RESPONSES**

**4. RESEARCH ORGANIZATIONS**



# University of North Carolina

at Wilmington  
Department of Chemical and Physical Sciences  
601 North College Road  
Wilmington, North Carolina 28403-3297

August 30, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Sir:

I am a faculty member in the Chemistry Division of the University of North Carolina at Wilmington and my specialty is chemical oceanography. I am very interested in the preservation of Masonboro Island, primarily because I appreciate the scientific value of this undeveloped island as a natural laboratory.

Masonboro Island is a completely undeveloped barrier island, one of very few such islands remaining in this state. As such, it is a unique and valuable resource. The New Hanover County location of Masonboro Island places it near the city of Wilmington and the UNC-W campus, in a region undergoing rapid urbanization. Masonboro Island is easily accessible by small boat, and has traditionally been used by UNC-W faculty and students as a natural laboratory for both teaching and research.

The diversity of habitats, the richness of the flora and fauna, and the proximity of this unspoiled natural system to the University of North Carolina at Wilmington provides this state with a most significant resource. With Masonboro Island in its present pristine state, investigators at the University of North Carolina at Wilmington and at other campuses and other universities are assured the existence and availability of a natural laboratory for research and teaching. It is essential that this island be preserved in its entirety to retain this value as a natural laboratory. Maintained in its natural state, this island would be of enormous value in the future; it would then be perhaps the only undeveloped barrier island remaining in this geographical area, and the sole laboratory for addressing scientific questions not yet formulated.

4.1.1

4.1.1 Comment noted; no response necessary

Sincerely,

*Joan D. Willey*  
Joan D. Willey  
Associate Professor



Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/ NOAA  
3300 Whitehaven St. NW  
Washington, D.C. 20235

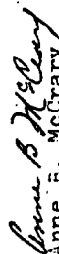
Dear Dr. Foster;

I have reviewed the draft environmental impact statement/draft management plan for the Masonboro Island Component to the N.C. National Estuarine Sanctuary, and would strongly recommend adoption of the preferred alternative i.e. acquisition of the entire system. As a unit, it will provide a readily accessible, undisturbed natural laboratory, which is necessary for long-term studies of coastal processes and wise management of coastal resources. The proximity of this system to UNC-W makes it uniquely valuable to the marine science program at the university in terms of education as well as research.

Although the facilities suggested in the management plan are minimal, even those are not essential and it would be preferable to put all of the available money into acquisition, if necessary.

The policies which have been proposed with regard to research projects and to traditional uses are reasonable and will protect the resource values of the sanctuary.

Sincerely,

  
Anne B. McCrory  
Assoc. Prof. Biol.  
UNC-Wilmington

4.2.1 Comment noted; no response necessary

4.2.2 The highest priority for the use of available funds during the acquisition phase and development is in acquiring the key land and water areas of the sanctuary. The construction of a boat dock, boardwalk, and the establishment of boat transport facilities, are of secondary importance to acquisition of key land and water areas sufficient to designate the Masonboro Island as a component of this North Carolina National Estuarine Sanctuary

4.2.3 Comment noted; no response necessary



UNIVERSITY OF NORTH CAROLINA

at Wilmington  
28403-3297

27 August 1984

DEPARTMENT OF BIOLOGICAL SCIENCES

601 SOUTH COLLEGE ROAD

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

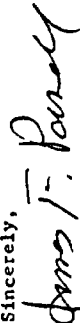
Dear Sirs:

I would like to express my support for the inclusion of Masonboro Island in the National Estuarine Sanctuary System. I support the preferred alternative as outlined in the draft Environmental Impact Statement issued in July 1984. This alternative clearly provides the greatest protection to the island, and is the only alternative that assures the continued integrity of the island system.

My students and I have conducted research on the vertebrate animals on Masonboro at various times over the past several years, and, in my opinion, the island is a very important natural site. Several species of terns nest on the island each year, and shore birds make heavy use of the beaches and marshes during migrations. Wading birds are abundant in the marshes in summer, and waterfowl are present in winter. Clapper Rails are abundant all year.

Masonboro Island will be an excellent addition to the sanctuary system, and an important asset to the University of North Carolina at Wilmington and to the State of North Carolina as an excellent place to learn more about coastal ecosystems.

Sincerely,

  
JAMES F. PARNELL, Ph.D.

JFP:rep

4.3.1 Comment noted; no response necessary

4.3.1



THE UNIVERSITY OF NORTH CAROLINA  
AT WILMINGTON  
601 SOUTH COLLEGE ROAD  
WILMINGTON, N.C. 28403-3297

WILLIAM H. WAGONER  
Chancellor

TELEPHONE: (919) 791-4330

August 29, 1984

Dr. Nancy Foster  
Chief, Sanctuary Programs Mission  
NOS/NOAA  
3300 Whithaven, N.W.  
Washington, D. C. 20235

Dear Doctor Foster:

I endorse wholeheartedly the efforts now being made in Wilmington and elsewhere to preserve Masonboro Island in its present undeveloped state.

Masonboro Island serves The University of North Carolina at Wilmington in a unique way. Since it is so close to the campus, our natural science students have relatively quick and easy access for field trips involving zoological and botanical studies and research. The natural science faculties here at the University would be severely handicapped in their ongoing flora, fauna and ecology studies of estuaries, salt marshes and wetlands, if the island's ecological systems were traumatized.

Any help which you and your associates may give us in this community endeavor would be greatly appreciated.

Most sincerely,  
*William H. Wagoner*  
William H. Wagoner

WHW/cb

4.4.1

4.4.1 Comment noted; no response necessary



University of North Carolina  
at ~~Wilmington~~

August 29, 1984

Dr. Nancy Foster  
Chief, Sanctuary Programs Mission  
NCS/NOAA  
3300 Whitehaven, N.W.  
Washington, D. C. 20235

Dear Dr. Foster:

Both as an educator and as a private citizen  
I want to be among those urging that everything possible  
be done to preserve Mazonboro Island for public purposes.  
It is a fragile precious jewel which, properly protected,  
will be enjoyed by countless people through the years as  
a place where both body and spirit can be renewed.

Sincerely,

*George E. Bair*  
George E. Bair

GEB:nf

4.5.1 Comment noted; no response necessary

4.5.1



## **COMMENTS AND RESPONSES**

### **5. LOCAL BUSINESS**





TODD M. SCHAFFER

Plaza East Office Suites  
1994 Eastwood Road  
Wilmington, North Carolina 28403  
919 256-4887 • Res.: 919 392-6046

August 28, 1984

Dear chief,

We need your help! We have an opportunity to preserve a barrier island, known to us as Masonboro Island. The island serves as a nesting ground for the once threatened Brown Pelican; the magnificent logger head turtles and many variations of shore birds.

There are those among us who would like to see housing developments, high rise condominiums and the like situated on this unspoiled ecological niche. What a shame for one of very few stretches left on our Atlantic coast.

Please give us your support to save this island and maintain its natural beauty.

On behalf of the marine wildlife, myself and my children,

Sincerely,

S.I.1 Comments noted; no response necessary.





**Dunlea Realty**

Post Office Box 4748 / Wilmington, North Carolina 28406  
919/392-3063

5051 NewCentre Dr., Suite 115E  
Richard A. Dunlea, Jr., Realtor

Aug. 28, 1984

Dear Sirs,

I am writing in behalf of the N.C. Office of Coastal Management's request for a \$982,000 federal grant to establish Masonboro Island as an estuarine sanctuary.

There is no greater social program, environmental program or people program that is more important than the preservation of our wetlands.

How much federal tax money will it cost if we allow the development to occur along the coastline, rapidly as was done in Florida?

For the mental health of the people, this country needs to give them an ocean to look at - not every square inch covered.

I have watched many people enjoy Masonboro Island. That needs to remain a public privilege.

5.2.1

Sincerely

Sue Kay

P.O. Box 22

Hampstead, N.C. 28443



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5.2.1 Comments accepted; No response necessary.





745 Masonboro Sound Road  
Crown Point Marine  
Wilmington, N. C. 28403 ■ Telephone (919) 791-4056

August 28, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOAA  
3300 Whitehaven St. N.W.  
Washington, D. C. 20235

Gentlepersons:

As owners of property on which we live just west of Masonboro Island on the Intracoastal Waterway we are very interested in saving the Island area from any development and for an estuarine sanctuary.

However, that is not the only reason for our interest:

It is a wonderful nursery area for fish and shellfish. We have observed the disappearance of many of our nursery areas over the last 60 years and would hate to see any more lost to development.

The area furnishes a natural laboratory and a living classroom for the faculty and students of the University of North Carolina at Wilmington and is used constantly by them.

There are many more reasons I could mention and I feel sure you have heard them all.

Please consider your decision very carefully. Once developed there is no going back.

Sincerely,

*Elizabeth and Emerson Willard*

(Mr. and Mrs. Emerson Willard)

5.3.1

5.3.1 Comments noted; no response necessary.





August 30, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Re: Masonboro Island  
New Hanover County, N.C.

Dear Sir:

Please add my name to the list of people who would like to have Masonboro Island remain at it's present state and in that connection I would support the application of the North Carolina Office of Coastal Management for the federal grant to enable them to purchase portions of the island to insure that it does remain as it is.

I am quite sure that you are aware of all of the environmental concerns in connection with this island and all of the studies that have been conducted can obviously provide much better reasons for it remaining as it is than I could. However, as a life long resident of this area, I do want to emphasize that I believe that the environmental concerns far outweigh the economic ones involved with development of the property and that the public trust can best be served by preserving this area of undeveloped seashore.

Sincerely yours,

5.4.1

John R. Hicks

JRH/mmp

5.4.1 Comments noted; no response necessary.



WILLIAM H. WEINEL, JR., M.D., FACOG.  
JOHN W. ORLAND, JR., M.D., FACOG.  
ANDREW R. CRACKER, M.D., FACOG.  
DAVID P. MASON, M.D., FACOG.  
CLARENCE L. WILSON, R.M.D., FACOG.

GLEN MEADE OBSTETRICS & GYNECOLOGY, P.A.

1809 GLEN MEADE ROAD  
WILMINGTON, N.C. 28403  
PHONE 763-9833

August 30, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Sirs:

I am writing in strong support for the maintenance of Masonboro Island off the coast of Wilmington, North Carolina as an estuarine sanctuary. Masonboro Island, one of a few remaining unspoiled beach and marshland islands, is in my opinion invaluable to our coastal environment and to the education of our children. This area which is easily accessible to local citizens and tourists contains countless species of fish, crustaceans, and shellfish in addition to being an important nesting site for multiple species of birds. Visits to Masonboro Island have been invaluable to my children leading to a growing appreciation of the multiple aspects of our environment.

I again urge you to strongly consider the North Carolina Office of Coastal Management's application for federal grant to establish this island as an estuarine sanctuary.

5.5.1

5.5.1 Comments noted; no response necessary.

Sincerely yours,

David P. Mason, M.D.



DPM/lm



August 28, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean & Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St., NW  
Washington, DE 20235

Dear Chief:

In an effort to lend a hand in helping to preserve the natural beauty and peace of Masonboro Island, in Wilmington, North Carolina, I am writing to you. I am asking as, not only a citizen of New Hanover County, but as a person who frequently takes advantage of the beauty and peace of Masonboro Island. Should this island be sold and developed commercially, we, in New Hanover County would lose much more than we stand to gain. Our area is experiencing a boom in resort-condominium development. However, if we allow the beauty and peacefulness of our coast to be ruined by the persistence of man and the ever-mighty dollar - we all lose, for we will look like and have all the problems of other over-developed resort areas. This sort of future for our beautiful coastline is not the kind I would like to look forward to.

5.6.1 Comment noted; no response necessary.

Please take all necessary precautions and steps, NOT to let the coast of North Carolina look like a condominium factory, with no resemblance to the natural beauty which brings visitors here from all over the country.

Yours truly,

HAROLD PARKER REALTY



Karen Chester

KC:fn

5.6.1





**NORTH CAROLINA FILM CORP.**

1223 North 23rd Street  
Wilmington, North Carolina 28405  
(919) 343-3500

August 29, 1984

Chief of Sanctuary Programs Division  
Office of Ocean and Coastal Resource Mgmt.  
3300 Whitehaven Street N.W.  
Washington, D.C. 20235

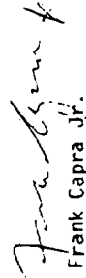
Dear Sir,

I strongly urge you to approve the North Carolina Office of Coastal Management application for Masonboro Island, near Wilmington, North Carolina, to become an estuarine sanctuary. It is a valued and important privilege to be able to experience such an unspoiled seashore natural island so close to "civilization" and to be able to pass this privilege on to our children and their children.

Having enjoyed the beauty and quiet of Masonboro's dunes and beaches myself several times in the past weeks, I can personally attest to its marvelous qualities that would be totally changed and destroyed by any type of construction or development. In my opinion, and from what I can see, that of many others also, this federal grant would be extremely well spent and provide wonderful long term benefits to the people not only of this area, but also to the many tourists and visitors who come here.

Thank you for your kind attention.

Sincerely,

  
Frank Capra Jr.

FCJ/jg

5.7.1 Comment noted; no response necessary.



*A. G. Edwards & Sons, Inc.*

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Members New York Stock Exchange, Inc.  
First Union Bank Building - 919-763-1685  
Post Office Box 360  
Wilmington, North Carolina 28401

EVAN D. WATTS, JR.

Gentlemen:

I would very much like to see  
Masonboro Island remain in its natural  
state. The island offers wonderful recreation  
to all of the thousands that visit each year and it  
would be ashamed to put the island in the  
hands of developers. I speak for myself and other  
boaters who look forward to visiting Masonboro  
each weekend.

Sincerely,  
Evan Watts

5.8.1 Comment noted; no response necessary.

5.8.1



COMMENT AND RESPONSES

6. PROPERTY OWNERS



Chief, Sanctuary Programs Division  
National Ocean Service/ NOAA  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

August 14, 1984

From: James D. Coggin (heir Carl L. Fales, Sr.)  
2095 Mayflower Drive  
Woodbridge, Virginia 22192

RE: DEIS Masonboro Island Component: N.C. Estuarine Sanctuary

Your DEIS is not complete in that it does not show in its entirety the meets and bounds of ownership as granted and willed to the heirs and assigns as listed.

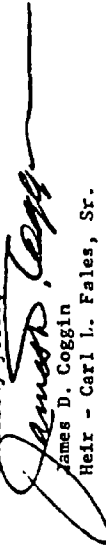
As an owner of a portion of the described property I wish and will that it remain as it is with the present owners.

We, the Coggin heirs, do not wish to sell, give, bequeath, grant or otherwise dispose of the property in our ownership as an heir of Carl L. Fales, Sr. It was willed to us to have and to hold and this we claim.

Because your study is incomplete in that it does not set forth all of the property involved, we therefore request that you not pursue further your attempts to acquire any portion of the mentioned property.

Further, your DEIS indicates that your sources have used the properties for their purposes for this long without need for acquisition, I cannot understand why you feel the need to acquire this property for your stated reasons.

Sincerely yours,

  
James D. Coggin  
Heir - Carl L. Fales, Sr.

Copy sent to:  
Dr. Foster  
Room 311  
US Department of Commerce  
Washington, D.C. 20230

6.1.1 The purpose of the Draft and Final Environmental Impact Statements (EIS) is to provide environmental information to public officials and citizens before a proposed action is taken which may have an affect on the quality of the human environment. An EIS is a detailed written report describing the proposed action, the need for the action the affected environment, alternatives considered, the environmental consequences of the proposed action and any other reasonable alternatives to the proposed action(s). An EIS will not normally detail the metes and bounds of ownership. An EIS is a document developed to assist in the decision whether to proceed or not proceed with the proposed action. However, prior to the State of North Carolina's acquisition of a property interest with the assistance of Federal funding, if such real property is land, a description of the metes and bounds of ownership will be necessary for each individual area.

6.1.2 Comment noted.

6.1.3 Part III of the EIS describes the affected environment. The proposed sanctuary boundary is described both graphically and in the text. See additional discussion in the 11.1 above.

6.1.4 The purpose and need for the proposed action are discussed at some length in Part I of this document; particularly section C. "The Proposed Masonboro Addition."



J. W. HOLLIS  
PO Box 904  
LAURINBURG, NC 28352


August 6, 1984

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, NW  
Washington, D. C. 20235

Dear Dr. Foster:

I am in favor of adding the Masonboro Island Component to  
the North Carolina National Estuarine Sanctuary.

Sincerely,

  
J. W. Hollis

CC: Joyce M. T. Wood  
Chief, Ecology and Conservation Division  
Room 6111, U. S. Department of Commerce,  
Washington, D. C. 20230

6.2.1 Comment noted; no response necessary.

6.2.1



August 31, 1984

8413 Rainbow Road  
Vienna, VA 22180

Dr. Nancy Foster  
Chief, Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, NW  
Washington, DC 20235

Dear Dr. Foster:

As heir of Carl L. Fales and legatee of property located on Masonboro Island, I wish to register my strong objection to the primary proposal described in the Draft Environmental Impact Statement (DEIS) and Draft Management Plan as prepared by the U.S. Department of Commerce/NOAA and the State of North Carolina concerning the inclusion of Masonboro Island in the North Carolina Estuarine Sanctuary.

Specifically, I do not wish to sell or otherwise divest myself of the property bequeathed to me by my mother, Margaret Fales Coggin, daughter of Carl L. Fales. Thus, I advocate the "...no action alternative...that would allow conditions to continue as they are today." I fail to understand how this alternative would "...have an adverse effect on the biological resources of Masonboro Island." Preservation of the island in its present state is most desirable to me.

I am extremely dissatisfied with the manner in which this action has been approached in that I have never been informed of public meetings, etc., as described in the DEIS. Specifically, a meeting was held in Wilmington on October 26, 1983 "where the OCM staff explained the sanctuary program and its intent to acquire the island." I ask that an explanation be given as to why I was never informed of this meeting, and how that circumstance may be avoided in the future.

Furthermore, in June of 1980 "Detailed inventories of over 112 important natural areas were reviewed and a solicitation of nominations for potential sites was sent to over 50 key parties..." Is not a landowner a key party? The answer would seem to be 'yes'; however, at no time was I informed of these proceedings.

As you must know, the heirs of Carl L. Fales have never registered the slightest intention of developing this property, nor do I have any intention of doing so in my lifetime. I would very much like to see the island remain as it is -- undeveloped and unencumbered by people. Yet the DEIS states, on page 3, that "Commercial fishing and shellfishing may also be compatible uses." This statement seems to contrast sharply with the purported intent of the Draft Management Plan. Even more paradoxical is the statement that use of the island for hunting is "...compatible with the primary sanctuary purposes." How can the State of North Carolina allow hunting on property inhabited by several endangered species?

6.3.1 Comments noted; no response necessary.

6.3.2 Comment noted; no response necessary.

6.3.3 The public meeting referred to was held by a local public interest group. This group invited the staff of the State of North Carolina's Office of Coastal Management to discuss the North Carolina National Estuarine Sanctuary and the State's interest in Masonboro Island. This meeting was publicized extensively in the Wilmington news media. The reference to this meeting in the Summary and in Part I.C.3. has been clarified. Because this meeting was not held by the State of North Carolina, the State did not notify landowners of record of such an unofficial meeting (see response to Comment 6.3.11).

6.3.4 The purpose of the site selection process was to evaluate which natural areas in North Carolina's extensive estuarine system would best fulfill the purposes of the National Estuarine Sanctuary Program -- unimpacted with extensive marshes, tidal flats and shallows; convenient to research and education centers; etc. For this preliminary scoping process, experts on estuarine systems and the North Carolina coast were consulted. Because of the very preliminary nature of the activity, and that no actions took place at any one site, no property owners were contacted at this time.

6.3.5 National Estuarine Sanctuary Program regulations (Appendix 1) encourage continued traditional low-intensity recreational and interpretive uses of the Sanctuary land and water areas if these activities are conducted in a manner consistent with the overall purpose of the Sanctuary (please see §921.1 of Appendix 1). Commercial fishing, shellfishing, and hunting are all traditional uses and, as presently conducted and regulated by the State, have not caused a significant adverse impact on the Masonboro Island environment or on the several endangered species occurring on Masonboro Island.



In the preface and again on page 10 of the DEIS, reference is made to the existing utilization of the site for research and education. To my knowledge, neither I nor any of the heirs of Carl L. Fales has ever been asked, nor has there ever been granted, permission to use the site by any other party. I would like an explanation of these activities and where they occur to determine if my property has been used without my permission.

Additionally, I respectfully request answers to the following questions:

What is the name and location of the developer who has "recently voiced plans of constructing a private club house on the north end of the island"? (page 18)

What plans do the State and the oil companies (listed under the heading National Interest Groups on pages 83 and 84) have in regard to acquisition and use of the island? I request information regarding specific and detailed plans, as they exist. If there are no specific plans, what general interest do these companies have? I find the inclusion of the oil companies in the list of interest groups most disturbing -- the profit motive seems obvious. I am also most eager to learn why the AFL-CIO is interested in the acquisition of the island by the State of North Carolina.

How do I become a member of the Masonboro Island Local Advisory Committee?

Why did I not automatically receive a copy of the DEIS as soon as it was made available?

Although numerous statements appear throughout the DEIS expressing a desire for cooperation, I find that in reality the State of North Carolina has not acted in good faith. I have never been informed, as an interested party, of any meetings or other public discussions concerning Masonboro Island. In fact, it was only through the efforts of another of the heirs of Carl L. Fales, Mrs. Dorothy Houck, that I was even informed of the existence of the DEIS.

I received a copy of the DEIS less than 30 days before the public hearing, hardly enough time to fully consider the implications of the plan. I therefore feel that the State of North Carolina, in conjunction with the Department of Commerce, has done its best to obscure its intentions as regards Masonboro Island and has most definitely not made "...every effort to keep the land owners of Masonboro Island fully informed on the status of the acquisition process."

I am a native of North Carolina, as were both my natural parents, their parents, their parents' parents, etc. I am very proud of my heritage, particularly that of my ancestors who settled in and around the Wilmington/Masonboro Sound area several centuries ago. I am loath to see a family legacy unfairly usurped by the government for purposes which seem to be admirable, but which are most obviously tainted by profit-induced motives. I am more than willing to discuss viable alternatives, but must insist upon retaining full ownership of the property that is legally and rightfully mine.

6.3.6

Please refer to letters from individuals representing academic institutions in Appendix 9 of the DEIS -- Research Interest in Masonboro Island. The majority of the research done at Masonboro Island has taken place in the salt marshes and shallow estuarine waters; both Public Trust areas and property of the State of North Carolina.

6.3.7

Please refer to an article in the Wilmington Morning Star (May 17, 1984) (see Part II.B.1. - page 45).

6.3.8

The list to which you refer in this comment is of agencies, organizations and persons receiving copies of the environmental impact statement. The preparers of this document are not aware of any expressions of interest in this project by either "oil companies" or the AFL-CIO.

6.3.9

The Masonboro Island Local Advisory Committee will be established if the decision is to establish Masonboro Island as a national estuarine sanctuary. If you are interested in participating on the Masonboro Island Local Advisory Committee, you should indicate your interest to the Director, North Carolina Department of Natural Resources and Community Development; Kaleigh, North Carolina.

6.3.10

You were not listed as a property owner on the New Hanover County Tax Rolls from which we acquired our mailing list. For those property owners not listed, the availability of the DEIS was published in the Federal Register and in the local Wilmington newspaper. Please also see response 6.3.11 below.

6.3.6

6.3.7

6.3.8

6.3.9

6.3.10

6.3.11

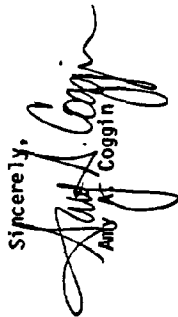
6.3.12



Dr. Nancy Foster  
Page 3

Conservation efforts are laudable. However, the plan described in the DEIS is not in the best interests of conservation, but is rather a potentially profit-making venture for the State of North Carolina. Furthermore, the island has not been accurately represented in the DEIS.

I am most heartily in favor of the conservation of Masonboro Island. But, unless and until the questions I have raised are answered to my satisfaction and a more realistic assessment of the island's make-up is presented, I will continue to adamantly oppose its acquisition by the State of North Carolina.

Sincerely,  
  
Amy A. Coggin

cc: Joyce M. T. Wood  
Chief, Ecology and Conservation Division  
U.S. Department of Commerce/NOAA

6.3.11

The DEIS was mailed to all landowners of record. Amy A. Coggin is not listed as a landowner by the New Hanover County Tax Office. The DEIS and a notice of the public hearing were mailed to the Carl L. Fales Heirs, at 401 E. Columbia Street, Falls Church, VA 22046. Furthermore, the State Office of Coastal Management tried to telephone all property owners from July 30 to August 2, 1984, to remind them of the public hearing. Those who could not be reached by phone, or for which a phone number was not available, were sent a letter reminding them of the public hearing. Now that we know you are a property owner, your name has been added to our mailing list.

6.3.12

Comment noted; no response necessary.

6.3.13

We disagree. The primary goal of establishing Masonboro Island as the fourth component of the North Carolina National Estuarine Sanctuary is the conservation of Masonboro Island. The State of North Carolina will not enjoy any profit from this project, but, as a result of the State's commitment to the project, considerable State resources (funds and manpower) will be devoted to Sanctuary acquisition, development, and operation.

6.3.14

Comments noted; no response necessary.



## COMMENTS AND RESPONSES

### 7. Sportfishing Groups



August 30, 1984  
RFO 13905 Maplefield Dr  
Raleigh, N.C. 27612

5

Dr. Nancy Foster, Chief  
Sanctuary Programs Division  
National Ocean Service /NOAA  
3300 Whitehaven Street, NW  
Washington, D.C. 20235

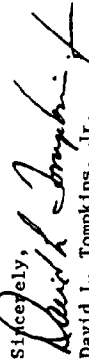
Dear Dr. Foster:

On behalf of the Raleigh (NC) Saltwater Sportfishing Club, I have been asked to provide comments to your office concerning the inclusion of the Masonboro Island Component in the North Carolina National Estuarine Sanctuary. The Raleigh Club is concerned with programs that serve to maintain and improve stocks of all marine species and programs that protect marine habitat.

We urge the approval of the request of the State of North Carolina for financial assistance from the Office of Ocean and Coastal Resource Management in the amount of \$982,900 for the acquisition of the Masonboro Island Component. The study and preservation of these lands and waters will serve to increase the understanding of our estuarine systems and how they impact on marine populations.

One point of concern that is not clearly identifiable in the draft Environmental Impact Statement involves commercial fishing activities. The Raleigh Saltwater Sportfishing Club agrees with the policy that allow traditional commercial activities within the estuarine component; however, we do not feel that areas should be reserved for such activities through commercial leases. This point does not appear to be specifically addressed in the study, and if allowed would be a point of objection by the organization.

We commend the State of North Carolina and the National Ocean Service on their efforts to conserve and protect our marine resources.

Sincerely,  
  
David L. Tompkins, Jr.  
Raleigh Saltwater Sportfishing Club

7.1.1 We have checked with the North Carolina Division of Marine Fisheries and there are no current shellfishing leases within the boundaries of the proposed Sanctuary. In addition, there is now a New Hanover County regulation prohibiting the letting of any new shellfishing leases in the county.



PART VII

Section C

Comments from private individuals supporting the addition of Masonboro Island  
as the fourth component of the North Carolina National Estuarine Sanctuary



Page 2 - 2b. Revised

As outlined 3-9 or 4-1964, I have made an educational movie from 1964 (I believe) for Shell Oil Co. entitled "Wildlife Watch" which is understood to be a film in the category of a film in the "wildlife" category. I was given a name for the film and the film was shown by University of North Carolina Public Television for the 500 times and is a "regular" in many of the public schools and colleges. I was paid for making it.

If you would like to see the above educational film as part of the program, I suggest that you write the Library, University of North Carolina at Wilmington, P.O. Box 26101, DR. JAMES LANIER, Director, Natural Resources Center, KURE BEACH, N.C. 28449. If they do not loan the film to you, I will make the film, please let me know, and I will make another suggestion.

I do not use typewriter and have no way to get the enclosed material typed except by commercial typist. Accordingly, I am suggesting that you get it typed, asking the secretary to leave a blank ( ) space for any word sheet not familiar with, return it to me in that form and I will print the uncertain words in the blank space and return it to you.

If you will pardon the personal reference, it made me feel too of my grandeur and I humbled. The action for the film, seems in the movie. Perhaps I should not mention it in the movie, but I am 80 years old and my clear feeling for the movie is that it is probably much better than of anyone else. If you are way I say "me" or "our" with reference to the movie, it is then I should feel the idea for the film to the film. I have been in the movie for 40 years - and I am the only one who has been in the movie for 40 years - and I am the only one who has been in the movie for 40 years.

Page 2 - 2b. Revised

As outlined 3-9 or 4-1964, I have made an educational movie from 1964 (I believe) for Shell Oil Co. entitled "Wildlife Watch" which is understood to be a film in the category of a film in the "wildlife" category. I was given a name for the film and the film was shown by University of North Carolina Public Television for the 500 times and is a "regular" in many of the public schools and colleges. I was paid for making it.

If you would like to see the above educational film as part of the program, I suggest that you write the Library, University of North Carolina at Wilmington, P.O. Box 26101, DR. JAMES LANIER, Director, Natural Resources Center, KURE BEACH, N.C. 28449. If they do not loan the film to you, I will make the film, please let me know, and I will make another suggestion.

I do not use typewriter and have no way to get the enclosed material typed except by commercial typist. Accordingly, I am suggesting that you get it typed, asking the secretary to leave a blank ( ) space for any word sheet not familiar with, return it to me in that form and I will print the uncertain words in the blank space and return it to you.

If you will pardon the personal reference, it made me feel too of my grandeur and I humbled. The action for the film, seems in the movie. Perhaps I should not mention it in the movie, but I am 80 years old and my clear feeling for the movie is that it is probably much better than of anyone else. If you are way I say "me" or "our" with reference to the movie, it is then I should feel the idea for the film to the film. I have been in the movie for 40 years - and I am the only one who has been in the movie for 40 years - and I am the only one who has been in the movie for 40 years.

ADRIAN D. HURST  
KURE BEACH, N.C.







Wondering if the record (the record) all records. They do not have the financial records. Why not? High school record book perfect. Why not? Why then the use of the Highways and Public? Public way (transportation) provides them facilities. And if facilities that we are gradually dropping a lot of social conditions. Some of the people to what existed in England during the days of Robin Hood. Why, if I remember the story correctly, the rich were on the forest and used guns, and the poor were denied the use and game of them? Perhaps it could be said that in the days of Robin Hood and all the forests and wildlife were destroyed, but endemic and wildlife do not exist.

For those who may feel that the road water and sanitation have been little or no economic value, perhaps it should be said that the road and recovery in the areas during the past 95 or more years, has definitely shown that the above areas are the NURSERY AREAS for many 90% of our fish and crustaceans, as well as some of the game and reptiles. Remember, starting from the office of Marine Fisheries in Washington City, David Carstairs, then in that, during 1983, the estimated economic value of both fish and shellfish was in excess of \$57,400,000. We cover our own marine culture for most of the average — and this does not take into account the "harvest" by sports fishermen. Again, if we take 300 miles for the length of North Carolina, each line and divide that into \$57,400,000, it appears that, on the average, each mile of

Page 4 - Marine Fisheries

\$180,000 EACH YEAR TO FISHERS "harvest" the riches of our coastal waters — and all this within the cost and application of commercial fisheries! If we take the length of 200 miles from the nine (9) miles and accept the value of the reefs and other marine products harvested per year is \$180,000 per mile, the value of the ~~harvest~~ yearly economic value of the island is about \$1,620,000.

We invited (took?) a band whose coastal waters were filled with fine forms of seafood, and whose harbors and sandy areas are, or were, the setting and nursery areas for many beautiful birds and other important forms of wildlife. Moreover, the above areas are as important for the form of life that inhabit them as the nursery areas in a hospital are for the new-born babies. We must not let it and lose them irrevocably here for the generations yet to come.

William S. Shurt  
August 25, 1984



Rob

Jordan for Lt. Governor

P. O. Box 1984, Mt. Gilead, NC 27306 919/439-6666  
1033 Wade Ave., Suite 116, Raleigh, NC 27605 919/821-0356

STATEMENT BY SENATOR BOB JORDAN  
Wednesday, August 22, 7PM

The State of North Carolina has proposed to acquire Masonboro Island to preserve this important estuarine complex for research and education.

The 5,000 acre Masonboro Island will be an important addition to North Carolina's estuarine sanctuary system. This undisturbed area will be ideal for future research, education, and public enjoyment. Its extensive salt marshes, mud flats, shallow creeks, and low dunes present a unique opportunity to better understand how undisturbed coastal systems function. This improved understanding is critical to our ability to properly manage development in other areas in the state so as to protect coastal water quality, fisheries, recreation, and important natural resources.

The State of North Carolina is committed to this program. To date, nearly \$2.4 million worth of land for our sanctuary system has been secured through donations. This is a significant accomplishment. During the 1984 General Assembly session, through my sponsorship and with the support of many others, \$100,000 was appropriated to be used towards acquisition of Masonboro Island.

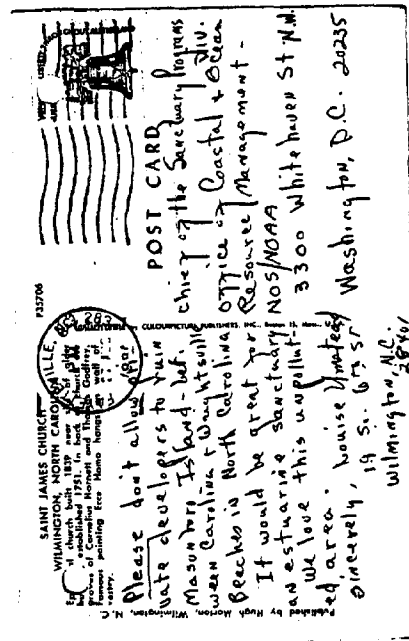
The estuarine sanctuary program is a partnership and serves important natural interests. The federal participation which has made this program possible should continue with Masonboro Island. The knowledge we gain here will be nationally significant and will be of great assistance to federal agencies and other states.

Researchers at UNC-Wilmington are ready to make immediate use of this area for research. The public schools, our marine resources centers, and others are ready to use this area for educational programs. There are too few undisturbed areas of this quality left in North Carolina, and we must take immediate action to save this very important resource.

Therefore, I strongly urge the U.S. Department of Commerce to expeditiously issue a final impact statement on this proposal and to give approval quickly to this grant request.

Thank you.

Senator Bob Jordan





Mrs. John P. Christensen  
229 Middleline Drive  
Wilmington, North Carolina 28405

Aug. 24, 1984

The Chief,  
Sanctuary Program, Div.  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Sir:

Re: Hearing (Aug. 22) my husband and I attended & feeling concerned about Nassau Island as a wildlife sanctuary for the sanctuary (N.C. Est. 1976). Many persons spoke in favor of the proposal, offering a variety of reasons for the island. It is vital that the island not be allowed to fall into the hands of developers who would ruin it as they have done with Myrtle Beach, Carolina Beach, and numerous other coastal areas. Nassau Island should be kept protected for its ecological value & the area out for the enjoyment of area residents.

Elizabeth M. Christensen

1700-2 Delaware Avenue  
Charlotte, N.C. 28211  
August 15, 1984.

Dr. Nancy Foster  
Sanctuary Program Division  
National Ocean Service/NOAA  
2300 White Haven Street, N.W.  
Washington D.C., 20235

Dear Dr. Foster:

The Charlotte Observer ran a front page story on the threat of development of the barrier island, Nassau Island, along the coast south of Wrightsville Beach and adjacent to Wilmington. I will be unable to attend the public hearing on August 22nd but would like to have a voice in the decision making process by asking that you consider seriously the application for purchase of the entire island. This would insure any encroachment for plans of developing the island for commercial reasons. As a member of the Friends of the Earth and aware of the need to preserve in pristine state this above mentioned island, I wish to make known my position on this important decision that will be made at the hearing.

Elizabeth M. Christensen  
(Mrs.) 229 Middleline Drive  
Wilmington, N.C. 28405




William Holt Trotman  
P.O. Box 352  
Wrightsville Beach, N.C. 28408

August 27, 1984

Chief of Sanctuary Programs  
Office of Coastal Management  
NOS/NOAA  
3300 Whitehaven St., N.W.  
Washington D.C.

Dear Sirs:

I have been a resident of Wrightsville Beach, N.C. for the past four years. I, like thousands of others, frequently visit Masonboro Island and enjoy the unequalled beauty of its natural state. It would indeed be a shame to miss a chance to preserve such a valuable and fast-disappearing resource as our barrier islands. The benefits of such preservation far outweigh any financial gains to be derived from private development. For the sake of this and future generations I urge you to provide the funds necessary to establish Masonboro Island as an estuarine sanctuary.

Sincerely,  
  
William Holt Trotman

121 Keaton Avenue  
Wilmington, N.C. 28403  
August 27, 1984

Sanctuary Programs Divisions  
Office of Ocean & Coastal Resource Mgt. NIS/NOAA  
3300 Whitehaven Street N.W.  
Washington, D.C. 20234

Dear Chief,

We strongly favor the preservation of Masonboro Island in its natural state. It is a priceless, irreplaceable natural resource.

Sincerely,

Barbara E. Michael Conner

Stark  
Gordon  
Shoat  
Kearney

RECEIVED  
OCT 20 4 03 PM '84



Sire,

clim. venting to surge  $\overline{\text{that this be done}}$ .

if it is not, the low will be uninteresting  
 its beautiful island just must be kept  
 for people, for birds, for turtles, for fish.  
 I know you would be troubled by the  
 struggle and fever of civilization by Ocean  
 Grant.

Sincerely,  
May Cor Jensen

August 27, 1984





8/27/84

Chief of the Sanctuary Program, Deer  
Office of Ocean & Coastal Resource Mgmt  
NOS/NOA  
3300 Whitehaven SE NW  
Washington, DC 20230

L. W. BEEGLE  
205 QUAIL RIDGE RD.  
WILMINGTON, N. C. 28403

Dear Sir:

Re: Masonboro Island

We live in the Masonboro area of New Hanover County, N.C. Being retired and having a small boat, we have been able to visit the island frequently and the beauty of the Masonboro Island. I also live in the area on the island several times.

The visit, boat riding and maps show how little left there is of the land. There is the ocean beach, the dunes - one line - some scrub on flat sand and all too soon the marsh.

N.C. keeps striving how unwanted the marshes are to the continuation of the sea life. Building on Masonboro Island automatically means pollution of water, destruction of dunes and scrub meaning further loss of the ocean nursery.

To maintain the ocean nursery and to pass on to our children and grand children as much ocean front in the natural state surge, both of us urge that Masonboro Island be preserved as 'an estuarine sanctuary'.

Myel - a hurricane of about 30 yrs ago - shaved with a storm can do to Wrightsville Beach and Carolina Beach. Development does not increase the land's ability to withstand a storm!

Sincerely,  
L. W. Beegle  
Cynthia L. Beegle

August 25, 1984

Sirs:

It would be nothing short of  
difficult to fail to preserve  
Masonboro Island in its present  
wilderness state.

Please count on my wholehearted  
support in all efforts toward  
that end.

Sincerely yours,  
Florence C. Murray  
1201 Essex Drive  
Wilmington, N.C. 28403



Mrs. William D. Wagner  
4015 Peachtree Ave.  
Wilmington, North Carolina 28403

August 24, 1984

We are both natives of New Hanover County and wish to add our endorsement for including Masonboro Island in our national Estuarine Sanctuary Program.

Saving Masonboro Island and the marshes behind it, is absolutely necessary for the sounds in southern New Hanover County to survive.

Harriette W. Wagner  
William D. Wagner

1710 Fordham Road  
Wilmington, NC 28403  
August 28, 1984

Chief, Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Madam or Sir:

I am writing concerning the move to declare Masonboro Island, off the coast of North Carolina, an estuarine sanctuary.

I have lived in Wilmington, NC for 12 years, and have received much enjoyment from the area beaches. We are fortunate in having the opportunity at this point, of preserving one of our last barrier islands as a natural sanctuary. North Carolina's barrier islands are almost if not all developed, some of them privately, thereby not allowing public access. I believe the public must be assured of access to beaches and natural, undeveloped open spaces on the beaches must be preserved for this reason. The fact that barrier islands and Masonboro Island in particular, are sanctuaries for wildlife and plantlife should go without saying. The unique ecology of these islands must be preserved for the people of North Carolina and the United States to enjoy.

I encourage you to approve the grant application for establishing Masonboro Island as an estuarine sanctuary.

Thank you for your attention to these comments.

Sincerely yours,

Marty Pridgen

Marty Pridgen

/mlp



805 Billmark Drive  
Wilmington, NC 28403  
August 28, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resources Management  
NOS/NOAA  
3300 Whitehaven Street, NW  
Washington, DC 20235

Dear Sirs:

I am writing as a concerned citizen with regard to your department's decision on the fate of Masonboro Island, New Hanover County, Wilmington, N.C. Much discussion in the media and on a personal level is taking place with regard to the possible loss of a very beautiful and ecologically important area of barrier island in North Carolina.

Masonboro Island provides one of the few remaining areas in our county where one can enjoy the unspoiled beauty of nature. It is also an important nursery area for fish and shell fish as well as a home for countless varieties of waterfowl. The inhabitable area cannot be very large and would present certain contamination of area marsh.

Please give strong consideration to protecting this area as an estuarine sanctuary and not allow the island to be spoiled by development.

Sincerely,

  
R. Michael Mincey

609 Masonboro Sound Road  
Wilmington, North Carolina  
August 27, 1984

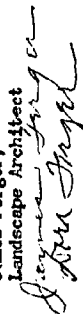
The Chief, Sanctuaries Programs Division  
Office of Ocean and Coastal Resources Mgmt.  
3300 White Haven Street, NW  
Washington, D. C. 20235

Re: Masonboro Island, North Carolina

Dear Sir:

Just to live in the area where we can sight the natural, undisturbed beauty of Masonboro Island across the intra-coastal waterway is to be aware of "an endangered species". We strongly approve (with our donations and our tax dollars) the preservation of this island as an estuarine sanctuary and as open land for the continued enjoyment of a caring public.

Sincerely,

James Fenger,  
Landscape Architect  
  
Dora B. Fenger  
Homemaker



Ben F. Munser  
Post Office Box 722  
Surf City, North Carolina 28445  
August 29, 1984

Chief of Sanctuary Programs  
Washington, D.C. 20235

Dear Sir:

I would like to express my wholehearted opposition to any commercial development of Masonboro Island, near Wrightsville Beach, N.C. I feel that the few natural wetlands and islands we have left are priceless, and should be protected at all costs.

I am appalled at the "open door" which developers seem to have on every hand.

Please do everything possible to protect our remaining natural resources.

Sincerely,  
Ben F. Munser

Aug 29, 1984

Sir -

As a resident of the Wrightsville Beach area in N.C. - I beg of you to keep Masonboro Island undeveloped. We, need places like the island, more than we need new buildings.

I, felt I had to write and ask for this favor - especially for the children growing up - who need these places to love & study.

Please consider my request.  
Thank you  
Mr & Mrs William Long



Dear Sir:

My family spends much of the summer at Wrightsville Beach, NC. As you know, there is a push to develop the Morehead Island area over time. Please do not allow this to happen. A few extensive structures are needed in this ever growing and developing coastal area.

It is most important that some beauty be left in natural splendor for our children and grandchildren to enjoy as we have enjoyed it in the past. The future depends on much preservation and conservation as it does on growth in the economic sense of the word.

Thank you for considering our request and allowing the Morehead Island to remain undeveloped by man.

Sincerely,  
The Howard C. Jones family

Dear Chief of the Sanctuary Programs

A week ago Sunday our church group had a boat trip to the beautiful undeveloped Masonboro Island. We picked, swam and explored the dunes and shell-studded beach. Pulled up on shore also were other small motor boats, sail boats, fishermen and families.

It was beautiful and peaceful. We returned to "civilization" with cherished memories of experiencing a vast unspoiled sedate wilderness and left only our footprints.

For the fate of Masonboro Island will be decided later: to be developed or not.... For Masonboro Island to remain a sanctuary for all of us the deadline is now or never....

Thank you. I do hope we'll never have to apologize to my grandchildren for letting Masonboro Island be developed.

Very S. Black  
(Mrs. David E. Black)

P.O. Box 420  
Wilmington NC 28402



August 28<sup>th</sup>

RECEIVED

AUG 29 1956

To Whom It May Concern:

As a child some 60 years ago, we spent summers on the beaches of New Jersey. They were beautiful with beach grasses and sand dunes and natural inlets. We watched this change over the years as the beaches became concrete jungles and jetties were constructed year after year to try and protect what little beach remained. This at an enormous cost to government and tax payers alike.

We hope to avert a similar situation at Masonboro Island in North Carolina. We would like to preserve a part of the natural

shore for future generations to love and to enjoy.

Please help to save our island!

Alice C. Widdell  
257 Marsh View Dr.  
Wilmington, N.C. 28403  
919-789-7756



REC 8/27/84

Dear Chief,

As a marine biologist from UNC-Wilmington and a 11 year resident of New Hanover County, I strongly urge you to designate Mosebore Island and establish it as an estuarine sanctuary. Please do not allow any development on this beautiful, unspoiled island! My husband & I live on a fresh water creek tidal marsh area that feeds into the Triacental Waterway. That is bordered by the Southern end of Mosebore Island. We can hear the ocean roar when the sea is rough were so

close. We love it here and the wildlife is spectacular! All of this will be



spoiled and gone if the island is developed! Please save it.

Thank you,

Cathy Beard

Cathy Beard  
122 Hickory Knoll Road  
Wilmington, NC 28403



RECEIVED  
August 28, 1984

Chief of Sanctuary Programs  
Office of Ocean and Coastal Management  
NOS/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

August 29, 1984

Dr. Nancy Foster, Chief  
Sanctuary Programs Division  
National Ocean Service/NOAA  
Washington, D. C. 20235

Dear Dr. Foster:

The time is NOW for Masonboro Island to be left alone. Another developed island is just another development. But there is only one Masonboro Island.

I recently read the following statement by the vice president in charge of environmental aspects before Kiasah Island was developed: "Generally the impact on Kiasah's wildlife can be intelligently managed so the impacts are acceptable and, in many instances, positive." (Does "positive" possibly mean that the wildlife would actually be better off?)

Kiasah was home to the loggerhead turtle. Now, the preservation of Masonboro Island is its only real chance for survival.

I wholly support the conservation of Masonboro Island for biological research and study and for limited recreation. To quote Jonathan Schell: "Every person is the right person to act and every moment is the right moment to begin."

Yours very truly,

*Vivian K. Bates*  
(Mrs) Vivian K. Bates

507 North Channel Drive  
Wrightsville Beach  
North Carolina 28430

To whom it may concern:

Let's preserve Masonboro Island. One October my husband and I motored over in our little flat bottom boat to discover a flourishing of Golden rod in full bloom being visited by thousands of monarch butterflies literally having a field day - it was a precious and magical sight.

As a resident (taxpayer) of Wilmington, N. C. I have watched the natural course of shifting sands and ever changing coast, the island "moves" particularly during winter storms. The part of the island closest to me as the crow flies is very thin and fragile. I have seen the ocean wash into the sound and indeed it will again. Should mankind be allowed to inhabit and "develop" Masonboro Island there will be jetties, bridges, deep water docks and other things to try to protect the houses man builds, thereby destroying natural resources and the very opportunity for nature to preserve itself, to naturally recycle itself. Then when a severe storm comes along man will holler "disaster" and want relief to rebuild when in fact the real disaster will have to allow a man to destroy that which is natural and precious in the first place.

Now is the time to establish our barrier island as an estuarine sanctuary. I beg and implore you to carefully consider agreeing to a federal grant to allow the N. C. Office of Coastal Management to preserve the island to buy up the island and keep it as is.

Thank you very much, respectfully submitted,

*J. Durrance*

Julia Vickers Durrance  
(Mrs. Alfred Lee Durrance)  
226 Hickory Knoll Drive  
Wilmington, N.C. 28403

Phone: 919-345-5458  
enclosing snapshots taken on Masonboro Island. you may keep them.  
description of photos on back of each one.



August 19, 1972

To whom it may concern

We know you have received many letters in favor of preserving Masonboro Island, an undeveloped barrier island between Coreline and Wrightsville Beach.

We, as new citizens of this area feel the need to preserve that beautiful area. There should not be any private development, but it should be a estuarine sanctuary. We need you to establish this.

Address: Wmly Cook  
3434 Spanish Lane Ct  
Wilmington NC 28403

RECEIVED  
AUG 22 1972  
MASONBORO

Please <sup>visit</sup> Masonboro Island  
to Wrightsville Beach, North  
Carolina an undeveloped barrier  
island. We have nothing left  
down there that is good for us  
to visit and enjoy.  
Wmly S.V. Hammond



Wilmington, N.C.  
August 29, 1984

RECEIVED

AUG 3

Chief of Sanctuary Programs  
Office of Coastal and Ocean Resources

Dear Sir:

Please help us save our beautiful  
Masonboro Island from Condo fever. I like  
to hunt & fish over there.

Sincerely,  
James H. Davis, Jr.

Mrs. Stanley Winborne, Jr.  
415 Bradley Creek Point  
Wilmington, North Carolina 28403

Sir:

I am writing on behalf  
of Masonboro Island, n.e.

Please leave this last  
bit of heaven on earth for  
our grandchildren and theirs,  
and the wildlife. We are  
already surrounded by  
wall to wall condos and  
more sewage and litter  
problems than the low  
allows.

Yours very truly  
Mary R. Winborne

Wednesday 29<sup>th</sup>



RECEIVED  
Aug 29 1984  
Chief of Sanctuary Program  
Office of Ocean & Coastal  
Resource Management

NOS/NOAA  
3300 Whitehurst St. N.W.  
Washington, D.C. 20235

Dear Sir -

I am writing out of great concern for the  
future of Masonboro Island. We definitely  
do not want this island to be privately developed.  
We feel, as residents of New Hanover County,  
that the island should be designated  
an estuarine sanctuary. I do hope our  
concern will be considered by your  
and your staff.

Sincerely  
Jackie & Bob Thompson  
922 Brynshire Dr.  
Wilmington, N.C. 28405

Aug. 29, 1984

Dear Sirs:

After a wonderful weekend on  
Masonboro Island, I join the  
many who hope the island  
will remain undeveloped  
and established as an  
estuarine sanctuary in the  
near future.

It would be unfortunate  
if the good sketches of beach,  
millions of crab clutches and  
flora on the island were  
to fall to the developers'  
profit.

Yours truly,  
Karen Laue  
6255 Quilla Hall  
The Bungalow, N.C.  
28403



Aug. 28, 1934

Dear Sir:

This letter is written on behalf of Masonboro Island. Masonboro Island is our get-away island. We go there to escape from the reality of our everyday life. We fish, camp out, and just walk on the island. The beauty of this island is beyond words. The natural beauty combined with the wildlife on Masonboro Island, is a sight to behold. There aren't too many islands left like this for all to enjoy.

Please don't allow Masonboro Island to be developed. There are other places for those people to invest their money, they don't have to destroy one of the few beautiful islands that we have left. If you have never walked on Masonboro Island, may I suggest that you and your family do it one day. Pack a picnic lunch, grab your fishing pole and head out to Masonboro Island. I bet it won't be a day that you'll ever forget.

I thank you for allowing us to express our feelings. I hope you'll listen and leave Masonboro Island as is!

Sincerely,

Mr. and Mrs. David Benton

PO Box 1128

Carolina Beach, NC 28428

Please help North Carolina save Masonboro Island from development. It is such a beautiful and peaceful to fall prey to condormiums, boat ramps, etc. Please help us to establish it as an estuarine sanctuary, so that we won't have to apologize to our grandchildren.

Thank you,  
Andy and Nancy Scott



August 28, 1964

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management, NOS/NOAA,  
3300 Whitehaven Street N.W.  
Washington, D.C., 20235

Dear Sirs:

In my opinion it will be a tragedy if Masonboro Island is not saved as an estuarine sanctuary.

There is so little of our coastal area left that Realtors have not turned into a maze of condominiums and shopping centers.

Masonboro Island is a beautiful area where the native population and the many tourist who visit here can enjoy the swimming, hiking, fishing and shelling. The shore birds, turtles, fish and other species of animal life enjoy this haven and should not be preempted by the human species.

It is my fervent hope that a Federal grant will be forthcoming to help save Masonboro Island for the present and future generations to enjoy.

Yours very truly,  
Dora P. Brause

Mag. Vera P. Brause  
829 Masonboro Sound Road  
Wilmington, North Carolina 28403

Mr. David Oliver  
250 Beach Road North  
Wilmington, North Carolina 28405

Chief, Sanctuary Programs Division  
Office of Coastal Resource Management  
NOS/NOAA, 3300 Whitehaven St., N.W.  
Washington, D.C. 20235  
August 28, 1964

Sir: Re: MASONBORO ISLAND; public acquisition.

As a retiree of this area, returned after forty-five years absence, I feel strongly that Masonboro Island should be set aside as an estuarine sanctuary.

Many of us, including a great majority, would like to see no development be allowed on subject island and that it be reserved for traditional public uses such as swimming, fishing, walking and swimming plus pleasure boating.

I thank you for considering this request. I hope your office will take timely action in consonance with the State of North Carolina in order to preserve this bank and establish Masonboro Island as a sanctuary for future generations.  
Sincerely,  
David Oliver



Wm. S. Schott  
915 Hill Road N.E.  
Wilmington, North Carolina 28403

Aug. 28, 1984

Dear Sir:

We urge the preservation  
of Mecombo Island,  
New Hanover County, North  
Carolina in its entirety  
as an undeveloped  
barrier island to be  
used for swimming,  
fishing, education and  
research.

We also urge the acts

of the proposals to  
build docks or nature  
trails. The natural  
beauty of this island  
can not be improved.  
We also urge the prohibition  
of any motorized vehicles  
as these vehicles  
damage dunes, bird nests  
and the peaceful  
atmosphere.

Truly yours,  
Wm. S. Schott  
William S. Schott



RECEIVED

DAVID S. HOLLOWAY  
Rt. 3 Box 334 AA  
Wilmington, NC 28403

August 25, 1984

Chief, Sanctuary Programs Division  
Office of Ocean and Coastal Resource Mgt.  
3300 Whitehaven St. NW  
Washington, DC 20235

Dear Sir:

I attended the public hearing on Aug. 22 concerning Masonboro Island. The following comments are submitted in support of making the entire island and marshes a national estuarine sanctuary.

I grew up in Wilmington and spent many summers sailing and exploring around the island. I majored in Biology in college. Recently I returned to Wilmington after 4 years in the Navy. The most prominent change I noticed was the rapid increase in development, especially on the beaches. This area is experiencing a development boom. The completion of the I-40 extension to Wilmington will encourage more people to move here. In the early 1970's there was an effort to save Bald Head Island (Smith's Island) from development. It is now privately owned. The beaches are a major summer attraction for residents and tourists. UNC Wilmington and Cape Fear Technical Institute have strong marine science programs. Therefore I strongly urge that Masonboro Island be left in its natural state for recreation and scientific use.

Please forward a copy of the environmental impact statement when they are available. Thank You.

Sincerely,  
*David S. Holloway*  
DAVID S. HOLLOWAY

SAVE MASONBORO ISLAND 8/29/84  
Please help preserve this  
beautiful sanctuary so future  
generations can enjoy this  
small area of "nature  
unspoiled."

*Fred & Marilyn August*  
P.O. Box 995  
Beulia Beach  
N.C. 29428

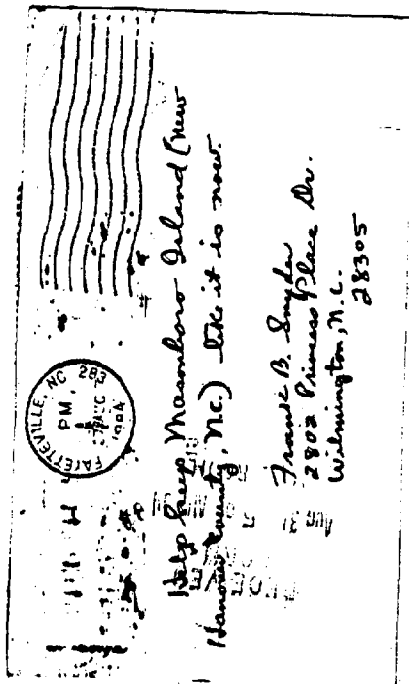


Dear Sir,

RECEIVED

AUG 11 10 04 AM '64

Please count this letter as one  
more person that feels that Mambo  
Island should remain undeveloped. It is like  
one of the last ONYX's FOR us here  
It is New Hanover County. It is  
unspoiled ungrilled and beautiful. It  
could always go to CAPE COOKOUT but  
think of the thousands of people who  
would never not go that far to see  
that wilderness. The northern part of  
Wrightsville Beach will be developed sooner  
please help us preserve what we  
have. Max Yoa.  
John Bowers,





Elizabeth Spalt  
300 James St  
Capeboro N.C.  
27510

Greetings.

I am 5 years old. I love  
Masonboro Island. Please save it.

ELIZABETH  
SPALT

August 1, 1980

Chief of the Maritime Resources Division  
Office of Ocean & Coastal Ecosystem Management  
NOAA

3300 Whitehurst Drive, N.W.  
Washington, D.C. 20235

Dear Mr. May:

I am writing to request that Masonboro Island, south  
of Westville Beach, be deemed as a preserve for public  
use, i.e., swimming, fishing, etc. The island plays  
host to many rare plants and animals and it is one  
of the few barrier islands, meaning that haven't been  
developed. There are very few places a family can go to  
enjoy a day on the water. As a child, I had many  
enjoyable days with my family fishing and boating  
on the islands around Westville. However, there  
is only one island left for our enjoyment near Westville  
because of the development in the Coastal Region.

I am urging you to please preserve Masonboro Island  
for public enjoyment. Another idea to preserve it would  
be for the sale of the environment. Because of our development  
the water has become polluted. Don't let the current  
problems become worse. I would my children to be able  
to explore and enjoy the clean water & magic of an undeveloped  
island as it needed. Thank you.



Susan Willey Spelt  
300 James St  
Charlboro MA  
02150  
September 1, 1984

Chief of Sanctuary Programs  
Washington DC

Dear Sirs

I am writing to urge your support in saving Masonboro Island.

Masonboro is a uniquely beautiful island, an oasis of wilderness on a relatively well developed coast. As our coastal areas become more and more developed natural areas such as Masonboro assume great importance not only to support marine life but also to serve as reminders of what the coast was once like.

Masonboro is a treasure. We are lucky to have a beach to save. Yet I ask you to save Masonboro not for myself, but for my children and for all children yet to come. We have a chance to give them a priceless gift. If we don't save Masonboro Island what will there be left to save. If we don't save Masonboro Island, who will?

Thank you

Sincerely

Susan Willey Spelt



ELLEN F. SPALT  
244 STRATFORD HILL  
CHAPEL HILL, NC  
27516

-

I support the preservation of Masonboro Island  
and urge that it be declared a North Carolina  
Nature Sanctuary.

Ellen F. Spalt-

85

Greetings

My name is Danny. We are  
going to study NC. I love to  
go out to masonboro. It is very  
pretty. If you put buildings on it  
then I won't be able to find  
shells very easily because  
other people will get there  
first. I don't want it to  
not be pretty anymore.  
If you don't save it then  
we won't be able to  
bring the dog out to  
the island. So please  
save it.

Danny Spalt

300 James St.  
Carrboro N.C. 27510



HENRY H. HARRISON  
1202 ESSEX DRIVE  
WILMINGTON, N. C. 28403

9/30/64  
Ref. Masonboro Island -  
North Carolina -

Gentlemen:

As a resident of New Hanover County and a frequent user of Masonboro Island, I strongly support, and urge your favorable consideration of Estuarine Sanctuary Status for the Island.

I submit two primary reasons:

1) Local estuarine waters are becoming increasingly polluted and with chosen plans normal use due to development-related sewage & contamination along creeks and waterways. The same would happen along Masonboro Island.

2

2) With intensive development at Carolina Beach & Wrightsville Beach and Topail Beach, the island becomes a true "Island of Nature" available for education, recreation and relief from developed areas. The limited practical development available on the island, if permitted, would destroy, disproportionately, the natural environment which exists there.

Thank you  
Henry Harrison



Please hear our plea to  
some Moravian Island for  
the people.

Sincerely  
Alan Byrd

In reference to Mrs. Blak's  
plea to some Moravian Island  
that was stated in the Sunday  
Star-News, I would also like  
to make a plea to some the  
Island as well. We must  
preserve what nature has  
given us, because once it has  
been taken away, it can never  
be returned. I know progress  
must be made, but please  
understand depriving us of  
nature's beauty in the name  
of progress to us who are  
concerned is not the kind  
of progress we want to see.  
It seems if it were left  
up to man, that there would  
be no natural sources left.  
The way God intended it to  
be.



Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOAA/NOAA 3300 Whitehurst Dr., N.W.  
Washington, D.C. 20235

August 31, 1984

Dear Sir,

I and my family wish to appeal to your agency the feelings we have regarding the preservation of Morebros Island at Wilmington, North Carolina.

We moved to Wilmington in 1970 when our sons were ages 10 and 7. Our love of the area grew because of it's quaintness and closeness to nature that we felt as we strolled the beach and observed the various creatures and plant life of the water and marshes.

At times we spent nights on our boat in a little cove at the island and the boys would put a small tent on the sands. Here were other families who came and enjoyed that tranquility also. So often we took for granted that tranquility country and things that seem small until they are threatened. Maybe this time, before it is too late we will have the heartfelt interest of our people in charge to step in and help save this beautiful little island for future families to enjoy. Our sons now grow 24 and 21 still recall our good times on Morebros Island.

Thank you for your consideration in this matter. Of course to a lot of people. Dad has given us the privilege of dominion over the earth and his creature to be enjoyed by all and not just the people who can afford to buy up the prized land.

Mr. Charles R. Chittlen  
113 Devonshire Lane  
Wilmington, N.C. 28403



Mrs. Martin S. Willard  
745 Masonboro Sound Road  
Wilmington, North Carolina 28403

August 30, 1984

Chief, Sanctuary Program Div.  
Office of Ocean & Coastal Resource Mgmt.  
3300 Whitehall Street, N.W.  
Washington, D.C. 20325

Dear Sir:

We are very eager for  
Masonboro Island to be made  
a component of the North  
Carolina National Estuarine  
Sanctuary.

Our year-round residence  
is on the main land side  
of the Inland Waterway

Island and the marshlands  
connected with it. I, Martin  
Willard, have enjoyed the  
beauty, tranquility and sea  
and wildlife of the Island.

I have seen more people  
enjoy and appreciate the  
beach than the years  
and I have been visiting  
there for sixty years.  
My wife has enjoyed it  
for forty years.

We hope it will not  
be developed but protected  
and made available for



public use and research.

We attended the public hearing on this matter and were impressed by the many and varied types of people who have and respect Masonboro Island.

Please consider making it part of the North Carolina National Estuarine Sanctuary.

Sincerely,

Mr. and Mrs. Martin Willard

E. C. HICKS, JR.

2404 Confederate Drive  
Wilmington, North Carolina 28403

August 31, 1984

Chief of Sanctuary Programs Division  
Office of Ocean and Coastal Resources Management  
NOS/NOAA  
3300 Whitehaven Street, NW  
Washington, D. C. 20235

Dear Sir:

We understand a decision will soon be reached as to whether Masonboro Island, an extremely valuable barrier island just off the coast of New Hanover County, N. C., will be sold to developers or be given a federal grant of \$982,000 and perpetually preserved as an estuarine sanctuary.

When I was younger there were any number of places on adjacent Wrightsville Beach, Shell Island and other areas up and down the coast where I could take my family for a day's fishing, picnicking, shell hunting and general enjoyment of sand, sea and sun. But with the recent proliferation of motels, condominiums, etc., they are becoming few and far between. Certainly, none remains that anywhere nearly equals Masonboro Island, and even those are fast disappearing. I shudder to think that my children, their children and their grandchildren may be totally deprived of this privilege.

The cost of preserving this valuable asset is peanuts when compared with the 18 billion dollars which, under H.R. 3678, the House of Representatives has just voted for water development and recreation in practically every, if not in every, state in the Union, many of them merely pork barrel boondoggles. It is peanuts beside the hundreds of millions which North Florida congressmen would have the government spend to build and maintain Lake Oklawaha and accompanying recreation facilities, very near which there is already a plethora of equally good, or better, fishing spots. And there would be absolutely no cost of maintenance of Masonboro Island.

Mrs. Hicks and I urgently implore you to exert your every effort to preserve this area as an estuarine sanctuary. With our many thanks,

Sincerely,

Mr. & Mrs. E. C. Hicks, Jr.



Steve A. Barr, D.O.  
2122 S. Clarendon, Nampa, ID  
Wilmington, North Carolina  
28053

Dr. Nancy Foster,

I am writing in support of making  
Masonboro Island a marine sanctuary.  
Although I am primarily a practicing  
Emergency Medicine physician in Wilmington,  
I am a former Wildlife Ecologist (M.S.  
Oregon State 1973) and well aware of  
both the environmental risks and  
fragility of this pristine barrier  
island. My work at Oregon State  
centered on the Coos Bay area, and  
I also spent one summer delineating  
the further resources of South Fork, Oregon,  
which I believe eventually became an  
estuarine sanctuary.

Pressure to develop Masonboro is  
intense - mostly applied by our  
State. Developers interested in the quick  
buck. Unfortunately, the people of Coos Bay  
North Carolina, having been surrounded  
by parasites all their lives, take a treasure  
like Masonboro for granted and may not  
be as militant or organized as needed  
to prevent destruction of our environment.

Heritage. We need your support to  
protect this haven for turtle, skink,  
nursery fish, and pelicans from becoming  
a "condo alley." If you personally  
have not seen the island, I invite  
you to personally visit our area  
and witness the treasure we are  
trying to save.

As is, Masonboro Island, serves as  
a source of beauty for thousands  
of local and vacationing individuals.  
The island is a physical barrier protecting  
our island area from the destruction  
of future hurricanes, and undoubtedly  
is a major nursery area for our fish  
and marine bird populations. In a  
fully developed state, the island will  
serve as a temporary beach retreat  
for at most hundreds of people - the  
scene beauty sea turtle, and present  
ecological systems will be gone, never to  
return.

We need your help. Please support  
our cause.

Thank you  
Steve Barr



Sept 1, 1984

Chief of Sanctuary Programs  
Office of Ocean and Coastal Management  
NOA/NAA

Washington DC 20235

Dave wanting to beg your help in  
saving Masonboro Island, on the coast near  
Wilmington, North Carolina.

Except for certain real estate developers  
we all in this area are concerned over  
the possible loss of the island. The people  
and the environment will both lose  
if the island is developed by commercial  
interests.

For years and years it has been greatly  
enjoyed and respected as a sanctuary  
by the people in this area. It needs to be  
preserved as such.  
Please help!

J.H. Cherry

JAMES A. PRICE JR.  
1723 AZALEA DRIVE  
WILMINGTON, N.C.  
28401

Envi. 8-31-84

Dear Sir

We think it most  
important that Masonboro  
Island be kept undeveloped.

Our main concern is

the small bays and  
estuaries from the beach  
to the Inland Waterway.

There are now being used  
by both commercial and  
sports fishermen for  
clamming, oystering and  
"flaming". Should the  
island be developed.

The pollution would,  
of course, ruin the water.  
There are so few areas  
left for these particular  
seafoods, please help us  
keep this island as it  
is now - undeveloped.

Imogen C. Biggs + Oscar K. Biggs  
(Mrs. & Mr.)



W. H. Hillebrand  
Wilmington, NC

Chief of Sanctuary Programs Div.

Office of Ocean & Coastal Res. Man.

NOS/NOAA

3300 Whitehaven St. N.W.

Wash., D.C. 20235

To Whom it May Concern,

I am writing in regard to the effort to preserve Murrelets Island, off the coast of SE N.C., in its natural state by establishing it as a sanctuary.

Though I have never seen the island, I feel it is vital to preserve this one representative of the few coastal areas yet spared from the intrusion of developers. This is important not only for the sake of the marine & avian wildlife dependent on it as a haven where they may be free to live as they have for thousands of years, which in itself is important, but also for the sake of our own children & their children. Too often in the rush to develop & modernize our society those things which might help our children develop sound & healthy attitudes toward their environment, toward wildlife & toward each

other.

There is a wonderful opportunity to teach these children, who will have the future responsibilities, that progress, and appreciation and protection of our environment, must go hand in hand if we are to preserve our quality of life. And as a learning tool, it can also prove invaluable in a society of academic pursuits.

We don't need yet another coastal development that is only too vulnerable to storm damage and that will damage the delicate ecology of the sounds & marshes nearby. What we need are our wild open spaces. Please help us to preserve Murrelets Island.

Thank you!

Sincerely,

Trendy F. Lewis



Fri. 8/31/84

Dear Sir:

Please make the decision to allow Thosoboro Island to be established as an estuarine Sanctuary. We're running out of islands and undeveloped beaches.

Thank you,

Lynnda Buchanan  
117 Bracke Lane  
Wilmington, NC 28403

L. T. SANFORD, JR.  
1846 MISSION HILL DR.  
WILMINGTON, N.C.

28403  
GENTLEMEN:

WE, THE UNDERSIGNED, WOULD RESPECTFULLY ASK THAT MASONBORO ISLAND BE KEPT AN ESTUARINE SANCTUARY AS, I'M SURE YOU KNOW, THIS AREA IS ONE OF THE DELICATE BREEDING AND FEEDING GROUNDS FOR WILDLIFE PLUS THE FACT THAT THE PUBLIC NEVER WITH THIS AREA MORE THAN EVER WITH THE INFUX OF CONDO AND HOME BUILDING AT NEARBY CAROLINA BEACH AND WRIGHTSVILLE BEACH COULD YOU PLEASE AFFIRM THE GRANT TO N.C. OFFICE OF COASTAL MANAGEMENT?

L. T. SANFORD, JR.  
MARION SANFORD  
A. H. LERAY

BETTY LERAY  
FRANK LERAY  
LOIS LERAY  
BERRY WILLIAMS  
ELIZABETH WILLIAMS



George L. Sauer  
6255 Turtle Hall Drive  
Wilmington, North Carolina 28403

8/30/84

Chief of Sanctuary Programs -

This is my appeal to  
Preserve Masonboro Island in  
its pristine beauty.

This land should be acquired  
and held for the citizen enjoyment.

Please register my concern against  
any development.

Sincerely,  
George L. Sauer

Aug 30 1984

Ray F. Miller  
257 South New Drive  
Wilmington, NC 28403

The Preservation Masonboro Island.

To Chief of Sanctuary Programs Pres.  
Dunn & Lowenthal Preserve Mgmt.

Dear Sir

I strongly recommend that Masonboro  
Island be purchased in its present state for  
all of the reasons so much expressed in the  
public hearing recently (Aug 22) held in Wilmington  
N.C. Future generations will be much  
served by so doing.

Ray F. Miller.



391 Early Drive  
Wilmington, NC 28403  
August 29, 1984

Office of Ocean and Coastal  
Resource Management

NOAA

3300 Whitehaven St. NW.

Washington, D.C. 20535

Attention: Chief of the Sanctuary Program Div.  
Sightmen:

We are writing in regard to establishing  
Masonboro Island, an undeveloped island between  
Carolina Beach and Wrightsville Beach, NC, as  
an estuarine sanctuary.

With the proliferation of condominiums on  
Caroline Beach and Wrightsville Beach that has  
taken place in the last year and a half,  
development of Masonboro Island would lead to  
the devastating loss of wildlife, resources, and  
enjoyment of nature for all future generations,  
as well as our generation.

There is a tremendous amount of  
development on our barrier islands now  
and the few remaining must be protected  
for future generations to enjoy. If this

generation does not save Masonboro Island  
then the enjoyment and pleasure we have  
known will be lost to our children  
and grandchildren. Unlike animals that  
are threatened, land cannot be recreated!

We are asking that you appropriate  
money to assist in purchasing this land.  
Thank you.

Sincerely yours,  
Alex E. Elberg  
Lona B. Sharp



Aug 31, '84

Dear Pina -  
Would have sent this  
long paper, but  
just not. from  
vacation

Please pave  
Masonboro Island  
it is a vital part  
of our coastal system -  
a barrier island  
etc.  
etc.

We moved here  
to NC five yrs ago -  
love it, but find it  
working in coastal  
management.  
Sincerely, Mrs. J. Whittle

MRS. GORDON F. WHITTIER 8205 MAHARD DRIVE, WILMINGTON, NC 28403

Post Card

Regarding: Effort to Save Masonboro Island

Having traveled over much of the  
U.S. Masonboro Island (North  
Carolina) is one of the most beautiful  
places I have seen. I would like to  
see it again, children & grandchildren.  
The island serves as a sanctuary  
for many sea birds, including the  
pelicans and other wildlife. Please  
make the island an educational center.  
Masonboro Island  
N.C.



August 28, 1984

821 MASONBORO SOUND ROAD  
WILMINGTON  
NORTH CAROLINA 28403

Chief of the Sanctuary Program Division  
Office of Coastal and Ocean Resources  
8/28/84

Dear Sir,

Since 1925 I have lived in  
right of Masonboro Island, and I  
hope I can be preserved just as it  
is as a treasure and treasure.

My first husband always had  
a small boat and motor and we  
enjoyed many visits to the island -  
to walk on the strand and swim -

Please keep it as it is -

Sincerely,  
Eleanor LeGrand Harvey  
Mrs. David Harvey

August 31, 1984

Please keep Masonboro Island in  
its natural state so everyone can  
enjoy it.

Masonboro Island is a beautiful,  
calm, peaceful island and it should  
be preserved so that people of  
all income will be able to enjoy  
it. Right now, the only "cost" of  
visiting Masonboro Island is a  
boat to get you there and  
the fact that it is available  
to many, many people.

If the island is developed,  
the wealthy will be able  
only to enjoy the area. Please don't  
let Masonboro Island become  
another playground for the  
wealthy. Keep it in its natural  
state so everyone can enjoy  
it.

Thank you,  
Mrs. Kenneth Old  
220 Yorkshire Lane  
Wilmington, NC  
28403



July 30, 1984

We urge that Masonboro Island be preserved as it is. The natural beauty of the island is for more important to all of us than any commercial development could be.

Mary Elizabeth Hargan  
209 Yorkshire Ln  
Wilmington, NC 28403

Aug 28, 1984

Chief, Sanctuary Programs Div.  
Office of Ocean and Coastal Resources Mgmt.  
NOA/NMMA  
3300 Whitehaven St., NW  
Washington, DC 20235

To whom it may concern:

I am a 32-year father of two children who is very concerned about the fate of Masonboro Island, NC. During the 15 plus years I've spent in coastal NC, I've seen beaches change drastically from near-natural status to well-touristed development. I feel very strongly that we on the coast hold the power to help shape decisions that affect the quality of life for generations to come.

As a man of influence in these matters, I doubt if there could be any better use of your time and Federal funds than to work towards the preservation this fragile and limited marine resource. The bird, turtle, and other wildlife population on Masonboro Island is already finding survival difficult on parts of the island where increasing numbers of people walk across nesting grounds. Any development allowed, other than a couple of designated trails, could go a long way to driving these animals away in search of new habitats. And where on earth are they to go? Thank you.

Respectfully yours,  
Robert A. Finch  
200 Admiral Dr  
Wilmington NC 28403



300 James Street  
Carthage MS. 27510  
(919) 967-3054  
Aug 31, 1984

Chief of Sanctuary Programs Division  
Office of Oceans Coastal Resource Management

NOS/NOAA  
300 White Haven Street, N.W.  
Washington, D.C. 20235

R.E.: Masonboro  
Island

Please help preserve Masonboro Island, south of  
Wrightsville Beach, near Wilmington, North Carolina.

It is not now developed, and it is not suitable  
for development. I have been there many times and see  
how it serves as an effective barrier island and breeding  
ground and home for coastal wildlife. It is suitable for  
day visits - but not for building.

Please declare the area a sanctuary to facilitate  
its preservation. A grant has been applied for to  
establish it as an estuarine sanctuary. Please do everything  
you can to help protect the area.

There are many developed areas nearby. This gives  
the area variety and allows many people to enjoy  
an unspoiled area while visiting highly developed  
Wrightsville Beach. It is a good combination. Much better  
than continuous strip development - both for the

people and the environment.

Thank you for your consideration of these  
views.

Yours,

Allen Spatt

Allen Spatt



1105 Spring Mountain  
Wilmington, NC 28405

August 31, 1984

Dear Sir:

As you know, the fate of undeveloped Masonboro Island will soon be decided by your office.

It is my hope and prayer that this beautiful island will remain an estuarine sanctuary, protected by a well-deserved grant. This county, once a haven and home for many forms of wild life (including the endangered whooping crane, and sea turtle), is fast becoming a developer's paradise. Creatures on land and in our river and sea are "loving ground," not protected, but instead, threatened by the approach of greedy mankind.

Please let this beautiful island remain a sanctuary - protecting not only its native wild life - but also the migrating flocks that need its haven.

Sincerely,

Mrs. Betty Capps



Aug. 30, 1984

Ocean & Coastal  
Resource  
Management  
Washington, D.C.  
friends:

I want to express  
my opposition to the  
Development of Masonboro  
Island.

Please leave our Coastal  
Area so tourists can  
enjoy the natural scenery  
and not Cement walls  
I go to the coast to enjoy  
the beauties of nature  
not found any place else

Sincerely thanks  
Mrs. H. S. Strickland - 88+  
2-Neilsons Rest Home,  
Carolina Beach, N. C.

-- 28428 --

Mrs. William W. Minns, Jr.  
101 Lee's Cut, Box 3701  
Wrightsville Beach, North Carolina 28480

Gentlemen:

Please <sup>WR</sup>establish Masonboro Island,  
N.C. as an estuarine sanctuary.

So many of the barrier islands have  
been developed that only a few  
remain that can be established as  
sanctuaries. Once development begins it  
can never be undone.

Thank you -

William W. Minns

Please consider the 982,000 dollars grant!



8-20-84

## Memo

To Chief of the Sanctuary Programs Division  
Re Masonboro Island - N.C.

Date Sir:

Every year, for 30 years we have come

to the coast of North Carolina - love it.

Please do not develop Masonboro Island!

Let's preserve some of the natural beauty

that I thought for is worth it. Keep it.

Respectfully

Ray Amara

1090 Kingsway

Alhambra, Ohio  
44601

Signature

14

Chief of the Sanctuary Programs  
3300 Whitehaven St. N.W.  
Washington, D.C.

RE:

Masonboro Island  
Wrightsville Beach  
N.C.

Dear Sir -

By saving Masonboro Island from development  
is in a small way, many ways, of  
paying to the environment + the creatures that  
live there "Here it is yours forever, we have  
taken so much, now we want to let you  
have this small island to live free and  
undisturbed".

Why should such a treasure be allowed  
to be lost forever to benefit so few?

Please do all that is possible to help

Thank you  
Bill Hoffmann



JOSEPH W. WHITTED  
741 MASONBORO SOUND ROAD  
WILMINGTON, NC 28403

August 30, 1984

Office of Ocean and Coastal Resource Management  
3300 Whitehaven Street, NW  
Washington, DC 20235

Dear Sir:

It is my understanding that Masonboro Island is being considered as an addition to the North Carolina National Estuarine Sanctuary program.

From time to time for the past sixty years I have had the pleasure of visiting this delightful island and enjoying its beauty and solitude and serenity. Without going into its ecological value, which you can determine much better than I, I would like to speak on behalf of the future generations whose idea of a beach, unless definite measures are taken, probably will be a place of wall-to-wall condominiums and beer joint-lined boardwalks smelling of hotdogs and sun-tan lotion.

I sincerely request that you preserve this natural inheritance so that our descendants, both yours and mine, can enjoy it in perpetuity and know what our coast was like when the earliest explorers and settlers first arrived.

Sincerely,



306 Lawrence Apts.  
Princeton, NJ 08540  
August 30, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven Street N.W.  
Washington, D.C. 20235

RE: MASONBORO ISLAND, NORTH CAROLINA

Dear Sir:

As a native of New Hanover County, North Carolina, who, although not currently a resident, visits there regularly, I am writing to urge you to establish Masonboro Island as an estuarine sanctuary.

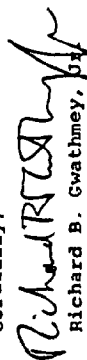
I see this as a perfect opportunity to preserve a little bit of nature in the face of helter-skelter development. As you doubtless know, the island (along with the marshes behind it) is a wildlife wonderland -- a haven for shore birds of all descriptions, shellfish of all descriptions (unlike the marshes behind nearby Wrightsville Beach), and other fish and sea creatures. It is relatively unspoiled, even though it is easily accessible by small boats and larger ones. As such, it is a perfect candidate for preservation for use by all the people, instead of the wealthy few, with minimum impact on the wildlife and unspoiled quality.

Furthermore, the waterways all around the island, and the two inlets on either end of it, are already so crowded during the summer that it is hard to imagine them with the significant increase in sheer number of boats which can be anticipated if major development should occur on the island. There is plenty of waterfront property -- oceanfront and otherwise -- under development within a few miles of Masonboro Island. Must we develop every inch of our seaboard for the benefit of the wealthy at the expense of the less fortunate and nature itself?

I urge you to approve the establishment of Masonboro Island as an estuarine sanctuary -- for the benefit and preservation of the creatures which live there and for the enjoyment of all who love and appreciate them and their unspoiled habitat.

Thank you for your attention.

Cordially,

  
Richard B. Gwathmey, Jr.



8/27/84  
P.O. BOX 964  
Carolina Beach, N.C.  
28428

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

Dear Chief of Sanctuaries:

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Sharla J. Kinkel - New Hanover County

Edna P. Manning " " " "

Virginia Kiser " " " "

May Ellen Lewis " " " "

David L. Manning " " " "

Mari Stephens " " " "

Brenda Spivey " " " "

Debra Mulliken " " " "

Jennie Long " " " "

Kimberly Lane " " " "

Robert Thompson " " " "

Sandra Brown " " " "

Pat Howard " " " "

Jane White " " " "

Mary Ellen Ryland " " " "

Debbie Ann Grew " " " "

- 2 - (OVER)

8/27/84  
P.O. BOX 964  
Carolina Beach, N.C.  
28428

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

Dear Chief of Sanctuaries:

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Peter K. Meyer - Carolina Beach, N.C.

Catherine E. Meyer " " " "

Sharon Q. Caldwell - New Hanover County

Donald Caldwell " " " "

Robert R. Shulley - Masonboro Island Pl. New Hanover Co.

Mary Lambert - City of Wilmington

Linda Mann - Wrightsville Beach

Patricia Parker - City of Wilmington

James P. Dineen, III - New Hanover County

Glenn B. Glass, New Hanover Co.

Debra H. Pearce - New Hanover County

Thomas L. Pearce - New Hanover County

Deanne Chestnut " " " "

Debbie Lee - Wilmington, N.C.

Debra Lee - Wilmington, N.C.

- 1 -



16/

203

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Florence Kye. New Hanover County  
 " " "  
 Jane Kye  
 Turkey Miller Powder Co.  
 Carolyn Kewes New Hanover County  
 One Miller New Hanover County  
 Carolyn R. Davis New Hanover County  
 Joe S. Seton New Hanover County  
 Margaret H. Hall New Hanover County  
 Michael Jacobs D. H.  
 Radcliffe Thomas Davis North Carolina  
 Young man N. H. County  
 Holly M. Ashen - New Hanover County  
 Edna Maclean New Hanover County  
 Rose M. Smith New Hanover County  
 Joseph Bates, New Hanover County (OVER)



New Novel

8/27/84

**Chief of the Sanctuary Programs Division**

**Dear Chief of Sanctuaries:**

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Michael K. Sanders  
Hampton, NC

Kraizer & Gore Wilson. N.C.

*P. basowath* W. Im. N.C.

Geny S. Prochoux, Wilm. N.C.

Neema F. Nashed N.C. wa

Wilm. N.C.

W. Lin N.C.

G. T. Fille  
Volm. N.C.

Sandra Thayer Wilton NC

2668

[illegible]

Wilmington N.C.



8/27/84  
P.O. BOX 964  
Carolina Beach, N.C.  
28428

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

**Dear Chief of Sanctuaries:**

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that the "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Susie Smythe  
 Elizabeth C. Baker  
 Lic. Jansen  
 Lucy Mason  
 Victor / Zimmer  
 J. W. Barker  
 Jay or Bowler  
 Laura F. Snodgrass  
 Dorothy A. Edwards  
 Leigh M. Morrison  
 Doris S. Horton  
 Elsie Hocken  
 Freda Uthacker  
 Carl Uthacker



8/27/84  
P.O. BOX 964  
Carolina Beach, N.C.  
28428

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOA  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOMA  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

**Dear Chief of Sanctuaries:**

Dear Chief of Sanctuaries:

We, the following residents of New Hanover County, N.C., strongly urge that you wholeheartedly support Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parks. We feel that the "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect that whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

F.V. Muncie In 2350 Macomb's Top Rd B-14 Walnut

J. H. Brown

230 Lecturer Dr. W.L.

O.G. Mc

565 pr. 1/2ary on text for LOT 2 w/m.

55

سید محمد علی

W. L. Gwendol  
D. L. M. L.

4602 Prairie St  
1117 1 - 1

B. V. McCork

Miss Shirley B. Wick.

206

-7-

8



8/27/84  
P.O. BOX 964  
Carolina Beach, N.C.  
28428

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAM  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

Dear Chief of Sanctuaries:

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Signed:

Steve Lee 626 Pine Valley Dr.  
Wilmington, N.C. 28403

Eds. Hammond Junior Po Box 941  
(Hamm) WAREHOUSE CROOK, N.C. 28480 (94) 741-1893

Wally Lashley 609 Trails End Rd.  
(Ashley) Wilm NC 28403

Richard O. Ford 609 Trails End Rd.  
(Ford) Wilm N.C. 28403

8/27/84  
P.O. BOX 964  
Carolina Beach, N.C.  
28428

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAM  
3300 Whitehaven St. N.W.  
Washington, D.C.  
20235

Dear Chief of Sanctuaries:

We, the following residents of New Hanover County, N.C., strongly urge that you establish Masonboro Island as a protected sanctuary. We urge you to protect the whole island; we feel this is preferable to protecting only parts. We feel that "development" of the island would not only be unsafe, but it would limit use of the island to a very few people. If the island is established as an estuarine sanctuary, it could continue to be used by the public for purposes such as fishing, hiking, beachcombing, birdwatching, nature field trips, clamming, crabbing, etc. It will also continue to serve as a hatchery for our valuable fisheries on the East coast. UNC-W professors and students can continue to use it for marine research, as well. PLEASE help us to protect Masonboro Island!

Laura L. Stetland

141 Trails End Rd Wilm, N.C. 919 392-428403

919-791-4877 W. H. Hammond III  
(Ross Hamm)

P.O. 1164 S. Ave., NC 919 692-8715

Wally Lashley (Spencer)

609 Trails End Wilm. N.C. 744-5



Box 1161  
Wilmington, N.C. 28402  
August 27, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management

NO5/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

To the Chief:

Thank you for allowing the public to comment on the federal government's possible role concerning the future of Momboro Island.

I will be brief, but it is difficult to limit my feelings and thoughts about Momboro, as they run deep.

I urge you to pursue the option of sitting aside the entire island for preservation. Momboro is a most beautiful and unique island, and it grows more and more unique daily as other islands undergo heavy development and are lost to public access and use.

On three Saturday mornings this summer, I walked the length of Momboro with some graduate students from UNC-Wilmington to record the numbers and evidence of nesting activities of the Atlantic Herring Gull. Each time we saw definite

evidence of nesting activity, and it appears that Momboro is utilized often by the turtles. This fact alone suggests that Momboro be better protected for wildlife.

I am a teacher in New Hanover County, and my classes have benefitted greatly from having access to Momboro, its beaches, its marshes, and its wildlife.

Many of my friends and I go sailing and picnic on Momboro, and we have joined the Society for Momboro Island and try to support that organization financially.

We all urge you to help us to save Momboro for our children and for the wildlife there. If you have doubts as to its value, please come visit and sail to the island, walk its beaches, explore its creeks and marshes, watch the birds, and have some delicious seafood at one of our restaurants.

Again, many thanks for allowing us to comment.

Sincerely yours,  
Beth Carter



August 28, 1984

Chief of Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
Washington, D.C. 20235

Dear Sir:

I would like to take this opportunity to tell you the pleasure my family experiences when we are able to go to Masonboro Island in Wilmington, N.C. We have a boat and go over there every weekend to fish and swim and walk over the dunes and look for shells. We love to see the sea gulls that live there and have had many a fun-filled weekend there.

Wrightsville Beach is so developed that local people cannot get on the beach except for a few "public access" walkways and we cannot find parking places any where near these areas.

My son is in a Boy Scout troop that has a Father-Son campout twice yearly on Masonboro Island and this affords the fathers time away from the other world with their sons for fellowship, fun and fishing and cooking, etc.

Please take into consideration these facts as you make your decision as to the future of Masonboro Island. This is a beautiful Island and should be preserved for the future residents of North Carolina as there are so few places left that don't have Condos on them.

Sincerely,

*Phyllis S. Powell*

Phyllis S. Powell  
109 Seminole Trail  
Wilmington, N.C. 28403

8/29/84

Dear Sir:

I am opposed to any development of Masonboro Island and urge you to prevent that happening.

Very truly yours.

*Mrs. Josie Montgomery*  
Mrs. Josie Montgomery

RECEIVED  
SEP 5 1984





Wilmington, N. C.  
August 30, 1984

Office of Ocean and Coastal Resource Management  
HOS/MOAA  
3300 Whitehaven St. N.W.  
Washington, D.C. 20235

Sirs:

My husband and I would like to be counted among those for the preservation of Masonboro Island.

As residents of the Masonboro Sound area and members of the "Quality of Life Alliance", we worked with that organization to change zoning laws, and limit growth in the fragile sound areas. We voted for the bond issue to finance the laying of sewer lines throughout the county. We live across the street from "Whiskey Creek" and are very much aware of the problem of pollution from septic run off in the creeks and streams that empty into the sound.

The preservation of some of these small islands is the only way we are going to save much of the marine life that is natural to this area.

Please consider seriously the preservation of this island.

Yours Truly,

*Robert E. Jager*  
Mrs. Wynne R. Jager

225 Sierra Drive  
Harbour Villa  
Wilmington, N.C. 28403

August 30, 1984

Dear Sirs,  
I am writing in favor of the federal grant to establish Masonboro Island as an estuarine sanctuary. My family and I spend many wonderful weekends there and enjoy the unspoiled beauty of nature at its best. We hope that we can keep that island safe for generations to come.

Sincerely,  
Phyllis F. Mason  
2302 Knightsbridge Rd.  
Wilmington, NC 28403



James A. Perger  
Perger Landscape Co.  
4521 Middlesex Rd.  
Wilmington, N.C.

Chief, Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA, 3300 Whitehaven St., NW  
Washington, D.C. 20235

RE: MASONBORO ISLAND

Dear Chief:

Resource management agencies in all departments, I would assume, are following administrative policies of economic priority in management decisions. Present development and developing areas of many kinds in the Cape Fear region will benefit enormously from the establishment of Masonboro as an island sanctuary. It is in the category of a long-term economic resource with immediate impact!

Please let me know by phone immediately if sanctuary status becomes unlikely. In addition, if time permits, please reply by mail concerning criteria and information affecting your decision.

Special interests pose a real threat without your help!

Sincerely,

*James A. Perger*  
James A. Perger

August 31, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA, 3300 Whitehaven Street, N. W.  
Washington, D. C. 20235

Re: MASONBORO ISLAND, N. CAROLINA

Sirs:

I am writing in opposition to the proposal that Masonboro Island be considered for private development.

Like millions of other Americans, I have learned a great deal in the past decade about the need for conservation of our natural resources, and my appreciation for environmental values has considerably deepened and broadened. That alone would perhaps have been sufficient to change my mind about writing you, but I must confess that MASONBORO ISLAND is enough in itself to keep as it is.

We have a very small day sailor which we keep on the inland waterway on Masonboro Sound. Our destination on each sail is MASONBORO ISLAND or Masonboro Beach, as we call it. I have never been there without feeling that here is a natural resource --- a natural resource ---- which our country cannot afford to lose. Between two over developed islands, Wrightsville and Carolina Beaches, we need to preserve one of the few uninhabited barrier islands for future generations to enjoy in its pristine beauty.

Last summer I delighted in seeing several Seaturtle tracks leading up to the high ground on Masonboro for egg depositing. I remember my father telling me as a child that he too would boat to Masonboro at night and actually see the turtles emerge from the sea. I would hope my children and grandchildren will also have this experience of a lifetime.....only if MASONBORO ISLAND IS PRESERVED IN ITS PRESENT STATE.

Please help North Carolina preserve this treasure through the federal grant to establish the island as an estuarine sanctuary. The commitment of the N. C. General Assembly with \$100,000 demonstrates that the people of North Carolina feel that it is of utmost importance.

Yours truly,

*Gillie S. Revelle*  
Gillie S. Revelle (Mrs. Riddick Revelle)  
2858 Skye Drive, Fayetteville, N. C. 28303



BRIAN J. LEWIS, P.E.  
336 West Renovah Circle  
Wilmington, N.C. 28403

(919) 343-8812

Aug. 30 1984

Wilmington, N.C.  
August 29, 1984

Chief of the S.P.D.  
Office of D.E.C. Management  
Washington, D.C.

Dear Sir:-

I wish to add my name to  
the list of those supporting a  
movement to decline Mason-  
boro Sound (between Wrightville  
Beach, N.C. and Carolina Beach, N.C.)  
an estuarine sanctuary.

Development of this unspoiled  
area would be a grave  
threat.

Virginia H. Beyer (Mrs. L.S.)  
3317 Camden Circle  
Wilmington  
N.C. 28403

Dear Sirs,

I want to urge you to grant North Carolina the money necessary  
to establish Masonboro Island as an estuarine sanctuary. It is so  
important to keep these delicate seashore wilderness areas from the  
hands of developers. Please help us save Masonboro Island.

Sincerely,

Brian J. Lewis



Aug 29, 1984

611 N. Channel Drive  
Wrightsville Beach, N.C.  
28480

Chief of Sanctuary Programs  
Office of Coastal Resource Management  
NOA/NOAA  
Whitehaven B.  
Washington, D.C.

Dear Sir/Madame:

My husband and I strongly favor and  
plead for the preservation of Masonboro Island  
as an estuarine sanctuary. My husband  
is a fisherman whose livelihood depends  
on water quality in estuarine areas.

Development will always have some  
degree of negative impact and in many  
areas has tremendous negative impact.

As strong naturalists, we also enjoy  
the recreational value of wilderness areas.

If Masonboro Island is developed, we  
will lose an important natural resource.

Sincerely  
Gail Craddock

1905 Wrightville Ave.  
Wilmington, N.C.

I would like to see my plan  
to that of others for the establishment of  
Masonboro Island as an estuarine  
sanctuary. Thank you for your help.

(Mrs) Harriet S. Saunders



WILLIS - OWN THE OUT WITH ROBINSON HOUSE  
Anthony

Thank you very much,  
Mrs. Virginia Connolly  
R.N., B.S.N., CERN

RECEIVED  
JAN 10 1964

VIRGINIA D. CONNOLLY

Dear Sirs:  
As a native Wilmingtonian I have always been blessed with easy access to many natural resources in and around the city. Growing up here was a child's paradise; one which I hoped would be inherited by my children and many generations to come. I had always hoped that my children could do as I did on a summer day - sail to Moorehead Island and explore the vast barren beach inhabited only by gulls and terns, broctored seabirds who would readily land, attack if you ventured too close to their nesting ground - the dunes. Frequently I found piles of boats, large floats which I imagined to be animals of a storm-seized ship. Once I even found the huge carcass of a sea turtle whose death evoked an odd feeling of sadness - sadness familiar to children when they lose a pet. It is an emptiness, a deep grief, over something you know you'll never see again.  
Dear Sirs: please don't let this beautiful island be that 'something' lost. Although as a child I was sure that I had discovered the island, I have since realized that it is enjoyed by many. Please help to preserve this 'Secret Spot' so that many children and



REC-1  
Aug 30, 1984

Dear Sir:

Chief of the Sanctuary Programs Division  
Office of Ocean & Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Aug. 30, 1984

Dear Sir:

Allow me to join the chorus of voices asking that Masonboro Island, off the North Carolina coast near Wilmington, be declared an estuarine sanctuary.

With so much development - truly overdevelopment - going on; it is a fantasy to see a real ocean beach. More-and-more, the prime natural and ocean settings are available to those with money. The average citizen sees himself "walled-out" from the ocean by row upon row of condominium or related construction. Many, many times areas that have been open to public access are no longer such.

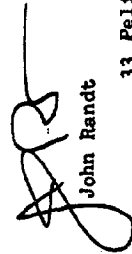
It is the last real natural beach left in this region of any size and yet is available for visits by many people as this is a density of population here.

As with all beautiful spots, there is pressure for development (and profits). However, the tangle of ownership (including county, state and federal) and narrow and limited building space is even more evidence this beautiful spot should be left so -- for future generations.

If Masonboro Island is not preserved it will never be able to be duplicated.

Have you ever visited ??? I have for years -- would be glad to host you around there some time.

Thanks for listening.

  
John Randt

33 Pelican Point Rd.  
Wilmington, N.C. 28403

919 763-0979

**SCOTT RANDT**  
Scott Randt, Age 12.

Please, Sir: Masonboro Island from development! It is one of the few undeveloped barrier islands left in North Carolina; please help us to keep it that way.

As a nation we are rapidly destroying irreplaceable natural resources - our wetlands are being drained and filled, our streams and sounds polluted by man's insatiable desire to build on a game every natural area.

Our state office of Coastal Management has applied for a federal grant to establish Masonboro Island as an estuarine sanctuary, and the state General Assembly has contributed \$100,000.00 toward the sanctuary.

Will you make your decision concerning Masonboro Island you will choose to leave it as God made it. Thank you.

Sincerely,

2541 Battery Place  
Wilmington, N.C. 28403  
Beth W. Smith



DAVID BINNEY PUTNAM JR.  
141 MAGNOLIA DRIVE WILMINGTON, N. C. 28403

8/28/94

Dear Chief -  
Please DO NOT allow any  
development of Masonboro Island.  
Thank you.  
David Putnam



HISTORIC BALD HEAD ISLAND LIGHTHOUSE  
North Carolina  
Photo by Lee Gossamer

A week ago Sunday our church group had a boat trip to the beautiful undeveloped Masonboro Island. We had a picnic, swam, and explored the causeway and beach. Pulled up to the island, we were met by a small motorboat. The boat was beautiful and peaceful. We had a wonderful time. The island is a beautiful and peaceful place. It is a great place to visit. It is a great place to visit. It is a great place to visit.

Picture of Island - Developed 700  
millionaires - Please save Mason  
boro Isle for us little people.  
Thanks - The Gossamer Family  
Asheville, N.C. 28401



POST CARD  
Chief of Sanctuary Program  
Office of Ocean, Coastal and  
No. 8-11000  
3300 Whitehaven St.  
Washington, D.C.  
20235



ROGER LEE ROGERS  
RT. 3 BOX 113  
LELAND, N.C. 28451 919-371-2073

"CARCENING 'MASONBORO ISLAND'"

DEAR SIR,  
AS RESIDENTS OF THIS  
AREA AND SURROUNDING  
COUNTIES, IT IS OUR RIGHT  
TO HAVE THE ISLAND AS  
A RETREAT FROM THE  
TOURISTS WHO TERRORIZING  
US ANNUALLY. I HAVE CAMPED  
MANY TIMES OVER THE YEARS  
WITH FAMILY AND FRIENDS  
ON THE ISLAND, AND IT  
NAUSIATES ME TO IMAGINE  
"STACK SHACKS" FROM ONE  
END TO THE OTHER OF SUCH  
A PEACEFUL AND BEAUTIFUL  
PLACE. WHERE WILL MY CHILDREN  
AND YOUNG CAMP, OR WHERE  
WILL WE BE ABLE TO WALK  
FOR HOURS ALONE TO SEARCH  
OUR SOULS AND PRAY TO  
OUR GOD IN HIS BEAUTIFUL  
PRESENCE ON THE ISLAND.  
WHERE WILL THE TURKES GO  
WHO FIND THEIR WAY ONTO  
HER BEACH TO NEXT. WHERE

WILL THE AIMLESS BLADE  
OF DEVELOPMENT CUT NEXT,  
PLEASE SIR, I PLEAD  
SINCERELY AS A LOVER OF  
THE LAND, AND FOR ALL THE  
RABBIT AND OTHER WILDLIFE  
ON THAT ISLAND, PRESERVE IT  
AS IT IS FOR OUR AND OUR  
CHILDREN'S SAKE. DON'T TAKE  
THE LAST SECRET PLACE FROM  
THOSE OF US WHO SEEK REFUGE  
AND SOLITUDE FROM THE CITIES  
AND TOURISM, MAY GOD STIR  
YOUR HEARTS WITH THE FOLLOWING  
LETTER FROM CHIEF SEATHL  
OF THE DUWAMISH TRIBE, WRITTEN  
IN 1855 REGARDING THE PRO-  
POSED PURCHASE OF THE TRIBES  
LAND. THOUGH WE'RE 130 YEARS  
APART MY HEART FEELS CLOSELY  
AS HIS AT THIS TIME, WHERE  
YOUR DECISION HOLDS OUR  
VERY FUTURE. GOD HELP  
YOU HELP US.

ROGER LEE ROGERS



"130 YEARS AGO

THE GREAT CHIEF IN WASHINGTON SENDS WORD THAT HE WISHES TO BUY OUR LAND. THE GREAT CHIEF ALSO SENDS US WORDS OF FRIENDSHIP AND GOOD WILL. THIS IS KIND OF HIM, SINCE WE KNOW HE HAS LITTLE NEED OF OUR FRIENDSHIP IN RETURN. BUT WE WILL CONSIDER YOUR OFFER, FOR WE KNOW IF WE DO NOT, THE WHITE MAN MAY COME WITH GUNS AND TAKE OUR LAND. WHAT CHIEF SEATHL SAYS, THE GREAT CHIEF IN WASHINGTON CAN COUNT ON AS TRULY AS OUR WHITE BROTHERS CAN COUNT ON THE RETURN OF THE SEASONS. MY WORDS ARE LIKE THE STARS, THEY DO NOT SET. HOW CAN YOU BUY OR SELL THE SKY? THE WARMTH OF THE LAND? THE IDEA IS STRANGE TO US. YET WE DO NOT OWN THE FRESHNESS OF THE AIR OR THE SPARKLE OF THE WATER! HOW CAN YOU BUY THEM FROM US? WE WILL DECIDE IN OUR TIME. EVERY PART OF THIS EARTH IS SACRED TO MY PEOPLE. EVERY SHINING PINE NEEDLE, EVERY SANDY SHORE,

EVERY MIST IN THE DARK WOODS, EVERY CLEARING AND HUMMINGBIRD, INSECT IS HOLY IN THE MEMORY AND EXPERIENCE OF MY PEOPLE. WE KNOW THAT THE WHITE MAN DOES NOT UNDERSTAND OUR WAYS, ONE PORTION OF THE LAND IS THE SAME TO HIM AS THE NEXT, FOR HE IS A STRANGER WHO COMES IN THE NIGHT AND TAKES FROM THE LAND WHATEVER HE NEEDS. THE EARTH IS NOT HIS BROTHER! BUT HIS ENEMY, AND WHEN HE HAS CONQUERED IT, HE MOVES ON! HE LEAVES HIS FATHER'S GRAVES BEHIND AND HE DOES NOT CARE. HE KIDNAPS THE EARTH FROM HIS CHILDREN. HE DOES NOT CARE; HIS FATHER'S GRAVES AND HIS CHILDREN'S BIRTHRIGHT ARE FORGOTTEN. HIS APPETITE WILL DEVOUR THE EARTH AND LEAVE BEHIND ONLY A DESERT. THE SIGHT OF YOUR EYES PAINS THE EYES OF THE REDMAN. BUT PERHAPS IT IS



BECAUSE THE REDMAN IS A  
SAVAGE AND DOES NOT UNDER-  
STAND..... ~~THERE IS NO QUITE~~  
~~PLACE IN THE WHITE MAN'S~~  
~~CITIES; NO PLACE TO HEAR THE~~  
~~LEAVES OF SPRING, OR THE~~  
~~RUSTLE OF INSECT'S WINGS;~~  
BUT PERHAPS BECAUSE I AM A  
SAVAGE AND DO NOT UNDERSTAND  
THE CLATTER ONLY SEEMS TO  
INSULT THE EARS. ~~AND WHAT~~  
~~IS THERE TO LIFE IN A MAN~~  
CANNOT HEAR THE LOVELY CRY  
OF A WHIPPOORWILL OR THE  
ARGUMENTS OF THE FROGS;  
AROUND THE POND AT NIGHT?  
THE INDIAN PREFERS THE SOFT  
SOUND OF THE WIND DARTING  
OVER THE FACE OF THE POND;  
AND THE SMELL OF THE WIND;  
ITSELF, CLEANSSED BY A MID-DAY  
RAIN, OR SCENTED WITH A PINON  
PINE. THE AIR IS PRECIOUS TO  
THE REDMAN. FOR ALL THINGS  
SHARE THE SAME BREATH -- THE  
BEASTS, THE TREES, THE MAN.!

~~THE WHITE MAN DOES NOT~~  
~~SEEM TO NOTICE THE AIR,~~  
~~HE BREATHES! LIKE A MAN~~  
DYING FOR MANY DAYS, HE IS  
NUMB TO THE STENCH. IF I  
DECIDE TO ACCEPT, I WILL  
MAKE ONE CONDITION. (THE)  
~~WHITE MAN MUST TREAT THE~~  
~~BEASTS OF THIS LAND AS HIS~~  
~~BROTHERS; I AM A SAVAGE~~  
AND I DO NOT UNDERSTAND  
ANY OTHER WAY. ~~I HAVE SEEN~~  
~~A THOUSAND ROTTING BUFFALOS~~  
~~ON THE PRAIRIES, LETT BY THE~~  
~~WHITE-MAN, WHO SHOT THEM~~  
FROM A PASSING-TRAIN. I AM  
A SAVAGE AND I DO NOT  
UNDERSTAND HOW THE SMOKING-  
IRON HORSE CAN BE MORE IM-  
PORTANT THAN THE BUFFALO.  
THAT WE KILL ONLY TO STAY  
ALIVE. WHAT IS MAN WITHOUT  
THE BEASTS? IF ALL THE  
BEASTS WERE GONE, MEN WOULD  
DIE FROM GREAT LONLINESS  
OF SPIRIT, FOR WHATEVER



(7)

HAPPENS TO THE BEAST ALSO  
HAPPENS TO MAN. ~~ALL THINGS~~  
~~ARE COMING TO NOTHING~~  
~~BE FALLS THE EARTH, BE FALLS~~  
~~THE SONS OF THE EARTH~~ OUR  
CHILDREN HAVE SEEN THEIR  
FATHERS HUMBLING IN DEFEAT,  
OUR WARRIORS HAVE FELT SHAME  
AND AFTER DEFEAT, THEY TURN  
THEIR DAYS IN IDLENESS AND  
CONTAMINATE THEIR BODIES  
WITH SWEET FOOD AND STRONG-  
DRINK. IT MATTERS LITTLE  
WHERE WE PASS THE REST OF  
OUR DAYS — THEY ARE NOT  
MANY. A FEW MORE HOURS, A FEW  
MORE WINTERS, AND NONE OF  
THE CHILDREN OF THE GREAT  
TRIBES THAT ONCE LIVED ON THIS  
EARTH, OR THAT ROAMED IN  
SMALL BANDS IN THE WOODS,  
WILL BE LEFT TO MOURN THE  
GRAVES OF A PEOPLE ONCE AS  
POWERFUL AND HOPEFUL AS  
OURS; ONE THING WE KNOW  
WHICH THE WHITE MAN MAY

(8)

ONE DAY DISCOVER, OUR GOD  
IS THE SAME GOD. YOU MAY  
THINK NOW THAT YOU OWN HIM  
AS YOU WISH TO OWN OUR LAND,  
BUT YOU CANNOT. HE IS THE  
GOD OF MAN, AND HIS COM-  
PASSION IS EQUAL FOR THE  
REDMAN AND THE WHITE.  
THIS EARTH IS PRECIOUS TO HIM;  
AND TO HARM THE EARTH IS  
TO HEAP CONTUMPT ON ITS  
CREATOR; THE WHITES TO SHALL  
PASS — PERHAPS SOONER THAN  
OTHER TRIBES. CONTINUE TO  
CONTAMINATE YOUR BED, AND  
YOU WILL ONE NIGHT SUFFOCATE  
IN YOUR OWN WASTE; WHEN THE  
BUFFALO ARE ALL SLAUGHTERED,  
THE WILD HORSES ALL TAMED,  
THE SECRET CORNERS OF THE  
FOREST HEAVY WITH THE SCENT  
OF MANY MEN, WHERE IS THE  
THICKET? GONE. [WHERE IS  
THE CIRCLE? GONE.] AND  
WHAT IS IT TO SAY GOOD-BYE  
TO THE SWIFT AND THE HEAVY.



BUT THE END OF LIVING AND  
THE BEGINNING OF SURVIVAL;  
WE MIGHT UNDERSTAND IT  
WE KNEW WHAT IT WAS THAT  
THE WHITE MAN DREAMS, WHAT  
HOPES HE DESCRIBES TO HIS  
CHILDREN ON LONG WINTER  
NIGHTS. WHAT VISIONS HE  
BURNS INTO THEIR MINDS SO  
THAT THEY WILL WISH FOR  
TOMORROW; BUT WE ARE  
SAVAGES. THE WHITE MAN'S  
DREAMS ARE HIDDEN FROM US,  
AND BECAUSE THEY ARE HIDDEN  
WE WILL GO OUR OWN WAY.  
IF WE AGREE IT WILL BE TO  
SECURE YOUR RESERVATION YOU  
HAVE PROMISED, THERE PERHAPS  
WE MAY LIVE OUT OUR BRIEF  
DAYS AS WE WISH. WHEN THE  
LAST RED MAN HAS VANISHED  
FROM THE EARTH AND THE  
MEMORY IS ONLY THE SHADOW  
OF A CLOUD MOVING ACROSS  
THE PRAIRIE THESE SHARES;  
LAND FOREST WILL STILL HOLD;

THE SPIRITS OF MY PEOPLE;  
FOR THE Y LOVE THIS EARTH  
AS THE NEWBORN LOVES ITS  
MOTHER'S HEART. IT  
WE SEE YOU OUR LAND, LOVE  
IT AS WE LOVE IT. CARE  
FOR IT AS WE CARE FOR IT.  
HOLD IN YOUR MIND THE MEMORY  
OF THE LAND AS IT IS WHEN YOU  
TAKE IT, AND WITH ALL YOUR  
STRENGTH, WITH ALL YOUR MIGHT,  
AND WITH ALL YOUR HEART,  
PRESERVE IT FOR YOUR CHILDREN,  
AND LOVE IT AS GOD LOVES US.  
ALL ONE THING WE KNOW OUR  
GOD IS THE SAME GOD. THIS  
EARTH IS PRECIOUS TO HIM.-  
EVEN THE WHITE MAN CANNOT  
BE EXEMPT FROM THE COMMON  
DESTINY.



4917-D Pepys Lane  
Wilmington, NC 28403  
August 31, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Dear Sir:

As a long time resident of the coast of North Carolina, all I have to say about the proposed development of Masonboro Island, is PLEASE, PLEASE, PLEASE, do not let anyone do it. This beautiful island is an essential refuge for many forms of coastal wildlife. With developers taking more and more coastal land every day, it is imperative that some exercise positive forethought and keep as much land as possible for animal refuge.

The island also affords a magnificent place for people to relax and enjoy the pursuits that only an unspoiled island can offer. To allow development on Masonboro Island would be a terrible mistake. Some jewels most always remain untarnished for the future. Our children would never forgive us if we ruined this truly great island.

Thank you.

Sincerely,

*Ann Levans*  
Ann Levans

THE PRECEDING LETTER TO THE  
PRESIDENT OF THE UNITED STATES  
WAS WRITTEN BY CHIEF SEANHL  
OF THE DUWAMISH TRIBE,  
STATE OF WASHINGTON, IN 1855  
REGARDING THE PROPOSED PURCHASE  
OF THE TRIBES LAND.



JOHN M. IRVINE

Aug. 28, 1984

"TRANQUILITY"  
521 MASONBORO SOUND ROAD  
WILMINGTON, N. C. 28403

Chief of the Sanctuary Programs Div.  
Office of Ocean and Coastal Resource Management

NOS/NOAA

3300 Whitehaven St.

Washington, D.C. 20235

Subject: Masonboro Island, between Wrightsville Beach  
and Carolina Beach, as an undeveloped wild life sanctuary.

You are well aware of the needs of wild life for this living  
room, so we will not discuss this.

Our local public is just about fenced out of places to see  
the ocean and beaches. Parents need such a place to take their  
children and adults benefit from exploration along the  
beaches of Masonboro Island. There are thousands of residents  
of New Hanover County who need access to such a sanctuary.

Many tourists have never had the experience of seeing the ocean  
and beach. Properly publicized the proposed sanctuary could be  
a drawing card for tourists.

Wherever one is from, a few hours on the beach of Masonboro  
Island is like a mini vacation, the ocean, surf, extensive beach,  
cries of sea birds puts things back in true proportions. I covet  
this for our public.

The alternative to a sanctuary on Masonboro Island is going to  
become very costly. During hurricanes a large part of this island  
is under water - perhaps 80%.

If the public is allowed to build on it they will have to face  
unnecessary and perhaps large individual losses.

Costs to the island residents will include high insurance costs,  
unavailability at all, and if not, heavy monetary losses during  
hurricanes.

Costs to New Hanover County taxpayers would eventually include  
water, sewer, police, evacuation costs caused by hurricanes.

Costs to the state of N.C. would be the demand for roads and  
eventually an extremely expensive bridge to the mainland.

If the proposed sanctuary is not acquired soon it will cost  
more for the land or become unavailable. Lets act on this now  
for the benefit of the present and future generations.

Sincerely,

*John Irvine*

113 Barton Oaks Drive  
Wilmington, North Carolina 28403  
August 30, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management

NOS/NOAA

3300 Whitehaven Street, N.W.

Washington, D. C. 20235

Masonboro Island  
Wrightsville Beach, North Carolina

This is to express my support for the North Carolina Office of Coastal  
Management's application to establish Masonboro Island as an estuarine  
sanctuary.

The ever-seaward march of development in this area seems intent on  
occupying all fragile and unstable barrier islands with squadrons of vacation  
homes. Unrestrained development will overwhelm the natural attractions and  
pleasures which the area has to offer. Here is a chance to preserve natural  
beauty and its attendant marine life.

A colloquialism keeps running through my mind: "If it ain't broke, don't  
fix it." I hope the Island will not be disturbed.

Sincerely,

*Elizabeth J. Anos*

Elizabeth J. Anos



August 30, 1984

Mrs. Linda D. Maret  
802 Pine Forest Road  
Wilmington, N.C. 28403

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven Street, N.W.  
Washington, D.C. 20235

Dear Sirs:

I am writing in strong support for the maintenance of Masonboro Island off the coast of Wilmington, North Carolina as an estuarine sanctuary. Masonboro Island, one of a few remaining unspoiled beach and marshland islands, is in my opinion a valuable asset to our coastal environment and to the education of our children. This area which is easily accessible to local citizens and tourists contains countless species of fish, crustaceans, and wildlife. It is an important nesting site for multiple species of birds and loggerhead turtles. Visits to Masonboro Island are invaluable because of the educational experience and aesthetic beauty.

I urge you to strongly consider the North Carolina Office of Coastal Management's application for federal grant to establish this island as an estuarine sanctuary.

Sincerely,

*Linda D. Maret*  
Mrs. Linda D. Maret

August 30, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Mgt.  
NOS/NOAA  
3300 Whitehaven St., NW  
Washington, DC

Subject: Masonboro Island, NC--  
Establishing an estuarine sanctuary

We believe that Masonboro Island, NC should be established as an estuarine sanctuary and preserved in its present natural state for future generations.

Masonboro is the last of the islands in this area that remains unspoiled and undeveloped. We strongly feel it should be kept that way. This island has served for decades as a quiet retreat for fishing and relaxing. It also serves as a nesting and feeding ground for numerous species of waterfowl that have few refuges left.

Development is incompatible with these noted uses. Development will destroy Masonboro's natural habitat and beauty. We believe these should be preserved for everyone to enjoy now and in the future. And certainly the island's value as a wildlife refuge can not be questioned.

With these concepts in mind, we hope the federal grant applied for will be allotted to the NC Office of Coastal Management so that Masonboro Island will be preserved.

*Dr. Suzanne Pfeffer and Daniel L. Pfeffer*  
Dr. Suzanne Pfeffer and  
Daniel L. Pfeffer  
327 Olde Point Rd.  
Hampstead, NC 28443



Dr. Foster

I am writing this letter to ask you  
to please allow you can to save  
Masonborough Island. from being  
developed. I'm other word please  
have the island thereby it in and  
possibly most have to keep it pristine.

Thank you.

Jim Coops

2913 N. Hydrangea Ave.  
Burlington, N.C.  
28603

9/3/84

Dear Dr. Foster,

I do not think that Masonboro  
Island should be developed. It  
is one of our <sup>most</sup> beautiful islands  
of North Carolina. The wildlife  
there is full and wonderful. I want  
to enjoy it as it is undeveloped  
and let Nature take care of it. I  
think many others feel the same way  
I do.

Sincerely,  
Christy Beddard



570 Macomber Long Rd  
Wilmington N.C. 28403

August 31, 1984

Dear Sir,

We would like for Macomber Island  
to remain as it is today. It's one place  
people can go and enjoy seeing things  
as Nature has them. Please don't  
let it be destroyed.

Thank you

Charles & Rhonda Steel

9/3/84

Dear Dr. Joslin,

I am writing in support of the  
"Save Macomber Island" campaign.  
During my recent few years in Wilmington  
I have enjoyed the natural beauty of  
this island and have appreciated it as  
a breeding ground for numerous types of  
wild life. It would be a shame for  
such a place to be disrupted  
and essentially destroyed if the  
proposed development plans  
materialize.

Thank you for your consideration  
and concern in this most important  
matter.

Sincerely,  
William J. Steel



September 3, 1984

Dear Mr. Foster,

This is an appeal to not develop Masonboro Island. Having recently moved to the area, I don't think people realize what a great resource it is. I hope commercial concerns will not overtake ecological ones.

Debbie Armstrong  
4313 F Cedarwood Lane  
Wilmington, NC 28403



8/31 1984

To: Chief of Sanctuary Programs Div  
Office of Ocean and Coastal Resources Mgmt  
NOA/NASA

3300 Whitehaven ST, NW  
Washington, DC (20235)

From: C D Trainum  
114 Brookshire Lane  
Wilmington NC (28403)

Re: Masonboro Island  
Wrightsville Beach, N.C.

This note is to support  
purchase of Masonboro Island, NC  
for inclusion in the  
National Estuarine Sanctuary  
Program.



Rt. 3 Box 334AD  
Wilmington, NC  
Sept. 1, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
3300 Whitehaven St. NW  
Washington, D.C. 20235

Dear Sir or Madam:

As a resident of North Carolina and as a citizen of the United States, I feel it is important that Masonboro Island in New Hanover County, North Carolina be preserved in its natural state. Few islands remain as this one does and it is important that this and the few others be preserved for the benefit of future Americans. No one will regret this action in the future, but many will regret its development resulting from short sighted pressure.

Yours very truly,

Charles F. Stehman Ph.D.

Charles F. Stehman

Dr. Nancy Foster  
NOB/NOAA  
Washington, D.C. 20235

Dear Dr. Foster:

This letter is sent in support of retaining Masonboro Island, in New Hanover County, as a natural barrier island. Keeping development off the island is critical to this goal.

I ask you to help us please in this endeavor to save our ecological heritage in North Carolina and New Hanover County. As a taxpayer and citizen, I hope that our federal government will be responsive.

Thank you for your help

Sincerely,

Charles F. Stehman  
Ph.D.  
Wilmington, NC 20403

September 3, 1984



Sept. 1, 1984  
 I am interested in the establishment of  
 Masonboro Island, near Wilmington,  
 N.C. as an estuarine sanctuary.  
 I should appreciate anything you  
 can do to further this project.  
 Ruth Worth

Sept. 2, 1984

Dear Dr. Foster,

As one who used to fish from Bald  
 Head Island and is acutely aware  
 by the change there since it's develop-  
 ment and "Circulation" I sincerely re-  
 quest that you do all you can to  
 preserve Masonboro Island. Do this  
 for all the little children to come  
 and see the sea ige which might  
 never be if Masonboro Island is  
 developed

Sincerely  
 Martha Matheson



Sept 1981

Dear Sir,

I Love Masonboro  
Island. Please  
save it.

Yours truly,

Bey Stehman

Apr. 4, 1984

Dr. Ward,

I am a sophomore at North Carolina State University in Raleigh. I have relatives living on Masonboro Island in North Carolina and I have always enjoyed visiting that area. Recently I was made aware of a movement in Eastern North Carolina to preserve Masonboro Island as its most natural state. I hope that this is a measure you will consider carefully. I have been to Masonboro Island many times, and have always enjoyed the solitude and serenity it has to offer. Moreover, I believe that our coastal areas are growing too rapidly to ensure adequate ecological management. We must only look at Curlew Beach and its development in the last five years for illustration of this point. What was once a lower road to Fort Fisher has become an crowded strip I do not care to visit that I need again. I would hope that Masonboro Island can avoid such a future. Our natural coastline has much to offer our citizens besides overcrowding and overdevelopment. I hope that Masonboro Island can remain isolated, primitive, and beautiful.

Thank you,  
Lee O'Brien



8/30/84.

Dear Sirs:

Please leave Macomb's  
Island just like it is.

We need it so, as well  
as the animals.

It's a piece of God's handy-  
work in all its proved  
beauty.

Sure will thank you  
a lot.

Callie Satterfield

2/ Captain: Quattri  
Caroline Reed, NC 28458  
August 31, 1984

Chief of Structure Program Division  
Office of Ocean & Coastal Resource Mgmt.  
DO5/NOAA  
3300 White Lane S.E., N.W.  
Washington, D.C. 20235

Re: Macomb's Island

My family would like to express  
their interest in preserving Macomb's  
Island as a natural environment.  
It would be devastating to the beauty  
and enjoyment of this area to allow  
development. Thank you for your  
attention to this matter.

Sincerely,  
Callie M. Satterfield



August 31, 1984

To whom it may concern:

Re: Save Masonboro Island, North Carolina

I have been living in Wilmington, N.C. for fifteen years, just a university student for the first year. Most of my life has been on a professional person. Most of my life has been on or near the coast of N.C., and since I'm 33 years old I've seen quite a few changes.

One of the main reasons I live in Wilmington, N.C. is it is a city with a beautiful coastal setting. Unfortunately though, development in our area has spawned a great deal of land from public use and at the same time has catered away at our natural beauty. I am not opposed to orderly development - because I realize the advantages it can offer our community, yet I feel that the beauty of Masonboro Island should be preserved from this development.

It is one of the few places in our area that is easily accessible to everyone where children and adults can see what a totally natural barrier island is like. It is absolutely beautiful. If you haven't seen it you should make a trip here to enjoy it.

Masonboro Island should be saved from development and with your help (over)

it can be preserved for the use of future generations who love the coastal-like my wife and I do.

I hope you will do everything in your power to end the association needed to save Masonboro Island.

Thank you very much,

Jerry & Susan Powell

152 Stokely Rd.  
Wilm., N.C.

28403

P.S. Please help us!



402 JEB STUART DR.  
WILMINGTON, N.C. 28403

Chief of the Sanctuary Programs Division  
Office of Ocean & Coastal Resource Management  
NOS/NOAA  
3300 Whitehaven St. NW  
WASHINGTON, D.C., 20235

Dear Sir:

Please Consider Positively  
A Federal Grant to establish  
Masonboro Island, between Wrightsville  
Beach and Carolina Beach, N.C., as  
an estuarine Sanctuary.

We need it - The wildlife needs it,  
the future needs it - Please  
do what you can to save this  
valuable natural resource for  
everyone - Not just those who  
want to make Temporary Whitt-

Thank you for your consideration.

Gary E Widenhouse

GARY E WIDENHOUSE

August 29, 1984  
222 S. Church Street  
Wilmington N.C.  
28403

Chief of the Sanctuary Programs Div.  
Office of Ocean and Coastal Resource Management  
3300 Whitehaven St. S.W.  
Washington D.C. 20235

Dear Sirs Madam:

As a single woman I need  
to take my little boat to Mason-  
boro island and marve at  
the wildlife there.

During my pregnancy my  
husband and I would take  
to the water every several times a  
week and sit watching Masonboro  
island at dusk and at night.

How Masonboro island has  
lifted our spirits!

Now my son is 5 months  
old. Please save Masonboro  
island so that his spirits too  
can be lifted. Sincerely,  
Pamela R. Rypke



Miss. Donald D. Bets, Edgewater  
1101 Arlie Road  
Wilmington, North Carolina 28403

August 31, 1984

Dear Sir:

We encourage you to save  
wonderful Masonboro Island from  
any kind of development. There are so  
very few untouched places on the  
east coast and that makes this  
island very special. We have  
such a unique opportunity, I pray  
we don't lose it. Fifty years from  
now if we leave it alone I think  
we will be thankful for our  
foresight. If we allow development  
I believe we will be very sorry.  
We attended the public hearing  
and were impressed with the sanctuary  
plan.

Donald D. Bets, m.d.  
Judith A. Bets  
are family

RECEIVED  
SEP 3 1984

Chief of Sanctuary Programs  
Ocean & Coastal Resource Management  
NOS/NOAA  
3300 Whitehurst Dr. NW  
Wash. D.C. 20235

SAVE MASONBORO ISLAND! Our coastline is  
fast becoming a haven for real estate developers  
and self-interest groups - we desperately  
need recreational sanctuaries for the  
refreshment of the spirit - we are not asking  
for swimming pools or tennis courts - simply  
for land to be left alone, shorebirds to be  
left alone, beaches to be left alone.

James J. Reil  
Rita P. Reil  
P.O. Box 1351  
Hampstead, NC 28443



CHARLES M. HICKS, M.D.      PETER G. ZACK, M.D.      WILBUR P. MATTHEWS, M.D.  
THE PEDIATRIC CENTER  
TELEPHONE (919) 762-2851 • 1914 GLEN MEADE ROAD  
WILMINGTON, NORTH CAROLINA 28403

An. and Mrs. J.C. Emig Jr.  
221 Springdale Dr.  
Wilmington, N.C. 28401  
August 30, 1984

Chief  
Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOAA/NOS  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Dear Chief:

Please accept our heartfelt wishes that Masonboro Island be added to our North Carolina sanctuary system. We need to keep this beautiful island as an unspoiled refuge for the health of its growing things and for the joy and peace of our souls.

Sincerely,

James A. Emig Jr.  
John C. Emig Jr.

9/2/84

Chief of Sanctuary Programs Division  
NOAA/NOS

3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Dear Sir:

I understand that your office is considering a \$900,000 Federal grant to help protect Masonboro Island (next to Ingleside Bend, NC) from commercial development and would like to ask that you appropriate that amount (or more if needed) for their worthy purchase.

I am a relatively "new" political person (at most 1990's are) but continuously donate 50-60% of my time and money to charity and causes. I see no real better expenditure of my money than to preservation of members. Sincerely,  
John C. Emig Jr.



1024 Macomboro Sound Rd.  
Wilmington, NC 28403

August 31, 1984

Chief of the Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOS/NMMA  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Re: Macomboro Island as an estuarine sanctuary

Dear Sir:

I am writing in support of establishing Macomboro Island as an estuarine sanctuary.

As a frequent visitor to the island I have always been impressed by what the island has to give, asking nothing in return. Be it for shellfishing, bird watching, or simply walking along the stretches of pristine, undeveloped beach, the island provides the tranquility and nourishment for reenergizing our troubled souls. It is a national resource and one that should be allowed to remain in its natural state.

Development is rapidly taking hold of the NC coast. Please help protect Macomboro Island for the people and for future generations of people, and allow them to experience what I have experienced ... a oneness with nature. Thank you.

Robert W. Wentz

Dear Sir,  
Aug. 29, 1984  
As citizens (I & property owners) on Wrightsville Beach, my husband & I are very concerned about the future of Macomboro Island. We would like to see it established as an estuarine sanctuary. The island makes it possible for us & so many others to visit an undisturbed barrier island.

We are definitely opposed to letting development occur there. When this comes before you &/or your committee for discussion, I will be sure to cast the number as 2 votes against development.

Sincerely,  
Sal Cape Spin Minkler





## THE CONSERVATION COUNCIL OF NORTH CAROLINA

307 Greenville Road, Chapel Hill, N.C. 27514  
(919) 942-7935 or 942-1080 (24 hours)

September 3, 1984

Dr. Nancy Foster, Chief  
Sanctuary Programs Division  
National Ocean Service/NOAA  
3300 Whitehaven Street, Northwest  
Washington, D. C. 20235

Dear Dr. Foster,

The Conservation Council of North Carolina has long supported acquisition and preservation of Masonboro Island in New Hanover County for research, education, recreation, water quality and habitat. After reviewing the Draft Environmental Impact Statement and Draft Management Plan of July, 1984, I am writing on behalf of the Conservation Council of N. C. to support the State of North Carolina's application for financial assistance to acquire privately owned tracts of Masonboro Island and to include Masonboro Island as the fourth component of the North Carolina National Estuarine Sanctuary.

Masonboro Island is a long, narrow embayment. No other estuarine areas of this type are currently protected by the National Estuarine Sanctuary program in the Carolinian biogeographic region. Sea turtles nest, brown pelicans and ospreys feed on Masonboro Island.

Students and professors from nearby University of North Carolina at Wilmington, other colleges and high schools already make extensive use of Masonboro Island for research and education. The island's unspoiled state and convenient location makes it an excellent natural laboratory. By protecting Masonboro Island as a National Estuarine Sanctuary the effects of coastal processes and development on the developed islands of Wrightsville Beach, north of Masonboro Inlet and Carolina Beach, south of Snow's Cut can be compared with Masonboro Island. Acquisition and inclusion of the island in the National Estuarine Sanctuary system would allow research and education to continue.

Dr. Nancy Foster  
September 3, 1984  
Page 2

The opportunity to acquire and preserve Masonboro Island as a estuarine sanctuary may soon end. A Wrightsville Beach developer has proposed an open-air pavilion on the north end of Masonboro Island. Speculators have purchased several tracts of land. As Carolina Beach and Wrightsville Beach are developed from sound to sea, developers are studying other properties for second homes. Masonboro Island is the last major ocean front real estate that is still up for grabs in Southeastern North Carolina.

Acquisition and preservation of Masonboro Island enjoys broad-based popular support in New Hanover County and in North Carolina. The State of North Carolina has already acquired 89.20 acres and New Hanover County, 15.20 acres. The State and county have managed their lands for conservation purposes. The Conservation Council of N. C. joins the Society for Masonboro Island and many other conservation and civic organizations in supporting acquisition and preservation of Masonboro Island.

The Conservation Council has reviewed and approves the proposed management plan and local advisory group for Masonboro Island.

In summary the Conservation Council of N. C. supports and urges favorable consideration of the State of North Carolina's application to include Masonboro Island as the fourth component of the North Carolina National Estuarine Sanctuary.

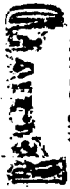
Thank you for your consideration.

Sincerely

*Bill Holman*  
Bill Holman, Member of the Board  
Conservation Council of N. C.

cc: Ms. Joyce Wood, U. S. Dept. of Commerce  
The Honorable John East  
The Honorable Jesse Helms  
The Honorable Charlie Rose  
The Honorable Karen Gottovi  
Mr. Dave Owens, N. C. Office of Coastal Management





AUG 28 1984

COASTAL RESOURCES COM.

Mr. Taggart,

I am taking this opportunity to express an appeal to preserve Masonboro Island and to keep it an undeveloped area. My support is behind Society for Masonboro Island, Inc.

Although I would like to preserve Masonboro as it is, for myself, I also want this area available to generations to come.

Please recognize the support and interest in keeping Masonboro undeveloped.

Sincerely,  
Tammy Jennings

Dear Dr Foster,

I would like to express my concern for the preservation of Masonboro Island. Such untouched lands as the island are becoming far too few. The island provides recreation and enjoyment of nature for many people. It would be a shame to see the island become filled with buildings and masses of people which would destroy the beauties of nature which are there. Thank you for any support you may provide to save this island.

Kim Sturges  
Wrightsville Beach NC  
28410



5822 Vickerman Dr.  
Washington, D.C. 20445  
Aug. 31, 1984

Dear Sir:

I would like to tell my view to others  
and say that I do not want Masonboro  
Island developed.

I want the island to remain in its  
natural state and be preserved for wild-  
life and people who want to enjoy  
nature at its best, quiet, peaceful, and  
beautiful.

Sincerely,  
Allister S. Cleveland

8-30-84

Chief of the Sanctuary Program Division:

Please, Please, help us keep  
at least one spot on the Atlantic  
Coast free of development. Carolina  
Beach is an example of over-build  
it has been ruined for all the people.

Let Masonboro Island remain a  
sanctuary for all of us.

Thank you,

Jayce Friedman



September 3, 1984

Dixie Lilley  
14 Borden Ave  
Wilmington, N.C. 28403

Dear Mr. Foster,

Please don't develop Masonboro Island. To allow development would result in the reduction of wildlife and endanger the fish and waterlife in the area.

As a native Montananian, I feel very strongly about preserving the natural part of this area. An "outsider" sometimes can see how valuable the area's environment can be to all of the residents. I have been able to take my family and friends to this island and enjoy the peace and serenity it offers.

Thanks for listening!

Dixie Lilley

Dear Sir:

I am writing concerning Masonboro Island. I am one-hundred percent in favor of preserving this pristine island. So many of the beach areas and islands have been developed in southeastern North Carolina. This is the nearest island (undeveloped) to the population center of Wilmington. This island should be preserved as it is for the people of this state to enjoy.

Sincerely yours,  
Terry Bland  
5825 Park Ave

Wilmington, NC 28403



Society For Masonboro Island Inc.



August 31, 1984

Dear Dr. Foster:

As a reminder I have a dual role.

Am in as President of the Society for Masonboro Island. The other as one who cares deeply about the past, present and future of our world.

Enclosed you will find copies of most of the local press coverage from the time I personally became involved in

August, 1983. So the organization of the society and our first public meeting October 26, 1983 which drew over 200 people.

A good time was not lost and a few

pre-date that time. By one or eight years and are significant because they show that the quest for the preservation of the island is not new.

In addition I have enclosed a list of other television, radio and press items.

It would be very queer that the majority of letters-solicited received are not responses to the draft environmental impact statement. One person being that my-few people saw a copy and the other reason - is that. Meanwhile, I heard in an appeal to the heart.



The response to the call to print Members is far greater than those who have come forth as members of the society or <sup>who</sup> went on record at the August 22 Evening. There is always a silent majority.

While the outcry appears emotional the underlying theme is a knowledge by the many-faceted audience of the island. The program - true to the public - is not to be denied.

Dr. the. entered to explaining I awarded the best support, when I made a brief statement at the Evening about the media.

I must say this

issue has brought forth their support along with fairness and accuracy.

The Society's position on the "P.P.S." was presented formally by our secretary at the August 22, 1984 Evening. I of course, support the position.

A few thoughts - Our country is rich in tradition and history and in our laws and our pride <sup>in</sup> presence and nature and built necessary memories and stories to pay homage to what is.

Thousands of land and can continue to be a living museum.



Now one can see the beauty  
 and strength and wisdom  
 of nature. Now the whales  
 and cubs of water gull -  
 the "murmuring" and  
 "screaming" of many  
 creatures. Smell the  
 salt marsh and the  
 sea. Feel the quiet  
 turbulence, the sense  
 of continuing and the  
 peace. These things allow  
 "humanity" too is  
 a threatened species -

Thank you for  
 your time.

Sincerely  
 Cairis Treasberg, President  
 Society for Marine Biology  
 Box 1800  
 Wrightsville Beach  
 N.C. 28586

## Protection of "Nasobrooks" Birds"

1. Coastal Carolina (Caroline Beach)  
 a. P.S.A.  
 b. News: E.S. Program  
 Society for Marine Biology

c. Interview

2. Island Gazette (Caroline Beach)

a. P.S.A.

b. News:

E.S. Program  
 Society for Marine Biology

3. T.V. 3

a. P.S.A. - frequent

b. news w/ film clips - frequent

c. "Good Morning Carolina"

or "Theater Show" - live

4. T.V. 6

a. P.S.A. - frequent

b. News w/ film clips - frequent

c. "Jack & Jill"

5. W.H.S. 1

a. P.S.A. - frequent

b. News

c. "Meet Your Neighbor"

d. "Welcome to the Town"

or "Great Beaches"



5-WHQR - public radio

a. OSA

b. News -

c. "Around the Cape" - Live Interview

7. WWPV

a. OSA

b. News

8. WRAV

a. OSA

b. News

c. "Deal of the Day" - 25 minute live interview

9. WUPV

a. OSA

b. News

c. Earthline

10. WUPV

a. OSA

b. News

c. Dr. Skerston - 15 minute interview

6306 Badwell Court  
Wilmington, N.C. 28403  
August 29, 1984

Chief of Sanctuary Programs Division  
Office of Ocean and Coastal Resource Management  
NOB/NOAA  
3300 Whitehaven St., N.W.  
Washington, D.C. 20235

Dear Sir:

I am writing to you in reference to the federal grant applied for by the N.C. Office of Coastal Management in order to establish Masonboro Island as a estuarine sanctuary. I feel that I speak not only for myself, but my friends as well when I say that Masonboro Island should be left unchanged from it's present state. I do not say that as a matter of only personal opinion because I feel there are many reasons for preserving Masonboro Island.

Masonboro Island serves as a nesting ground to many shore birds during the mating season. This I feel is one good reason to leave the island unchanged. Also, the artificial jettie on the island supports a large population of rock and blue crabs. The shallow waters on the island side of the jettie are popular territory to schools of Menhaden, Bluefish, and Spanish Mackerel. This makes the waters off Masonboro prime fishing spots and places for catching crabs.

As far as recreation goes, Masonboro is the perfect place for all types of things. The whole family can go to the island and all have something different to do. Dad can drift for flounder in the inlet while Mom scours the sand in search of sea-shells. Meanwhile the younger children can swim on the sound side in the coves along the island and the older children (like my friends and I) can take to the waves at any time of the day with our surfboards and inflatable rafts (something we have to wait until 4 p.m. to do on Wrightsville Beach).

If Masonboro Island was to be developed, I feel that many of it's beautiful qualities would be ruined. I like the peaceful seashore wilderness and hope that the federal government will realize how perfect Masonboro Island is right now and want to help those who love it for what it is keep it that way.

Sincerely yours,

John M. Youngmans

John M. Youngmans



## PART VIII: APPENDICES

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APPENDIX I

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APPENDIX 2

National Estuarine Sanctuary Program Regulations  
1974, 1977, 1983, and 1984



# **Federal Register**

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**Wednesday  
June 27, 1984**

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## **Part IV**

### **Department of Commerce**

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**National Oceanic and Atmospheric  
Administration**

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**15 CFR Part 921**

**National Estuarine Sanctuary Program  
Regulations; Final Rule**



**DEPARTMENT OF COMMERCE****National Oceanic and Atmospheric Administration****15 CFR Part 921****[Docket No. 40315-30]****National Estuarine Sanctuary Program Regulations**

**AGENCY:** Office of Ocean and Coastal Resource Management (OCRM), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Final rule.

**SUMMARY:** These final regulations revise existing procedures for selecting and designating national estuarine sanctuaries and provide guidance for their long-term management. Site identification and selection is to be based on a revised biogeographic classification scheme and typology of estuarine areas. The regulations place a greater emphasis on management planning by individual states early in the process of evaluating a potential site. The regulations reflect a progression from the initial identification of a site, through the designation process, and continued management of the sanctuary by the state after Federal financial assistance has ended. The regulations provide for regular programmatic evaluations of sanctuary performance. Clarifications in the financial assistance application and award process have also been made.

**EFFECTIVE DATE:** These regulations are effective Friday, October 5, 1984. This delayed effective date will allow sufficient time for the Congress to enact legislation pertaining to the conduct of the National Estuarine Sanctuary Program if it chooses to do so. If necessary, the effective date of these regulations will be postponed, and a notice thereof published in the *Federal Register*, in compliance with the notice provisions contained in section 12 of the Coastal Zone Management Act, 16 U.S.C. 1463a.

**FOR FURTHER INFORMATION CONTACT:** Dr. Nancy Foster, Chief, Sanctuary Programs Division, Office of Ocean and Coastal Resource Management, NOAA/NOS, 3300 Whitehaven St., NW., Washington, D.C. 20235, (202) 634-4236.

**SUPPLEMENTARY INFORMATION:****I. Authority**

This notice of final rulemaking is issued under the authority of Section

315(1) of the Coastal Zone Management Act, 16 U.S.C. 1461(1). The National Estuarine Sanctuary Program has been operating under guidelines published June 4, 1974 (39 FR 19922) and proposed regulations published September 9, 1977 (42 FR 45522).

**II. General Background**

On August 3, 1983 (48 FR 35120), NOAA published proposed regulations for continued implementation of the National Estuarine Sanctuary Program pursuant to Section 315 of the Coastal Zone Management Act, 16 U.S.C. 1461, (the Act). Written comments on the proposed regulations were accepted until October 3, 1983. These comments have been considered in preparing these final regulations. A summary of significant comments on the proposed regulations and NOAA's responses are presented below.

The final regulations establish the Program's Mission and Goals and revise the procedures for selecting, designating, and operating national estuarine sanctuaries.

**III. Refinements to the Regulations for the National Estuarine Sanctuary Program**

Based on experience in operating the Program and comments on the proposed regulations, a number of refinements in operational procedure and policy have been designed. The final regulations implement these refinements, which include:

**A. Defining the Mission and Goals of the Program**

The Mission Statement and Goals for the continued implementation of the National Estuarine Sanctuary Program stress the importance of designating estuarine area, through Federal-state cooperative efforts, for long-term research and educational benefits. Though broad in scope, they establish a framework within which specific Program activities are conducted. The Mission Statement and Goals are adopted by the final regulations (§ 921.1).

**B. Revision of the Procedures for Selecting, Designating and Operating Estuarine Sanctuaries****(1) Revision of the Biogeographic Classification Scheme and Proposed Estuarine Typologies**

The 1974 guidelines identified 11 biogeographic regions from which representative sites throughout the coastal waters of the United States

would be chosen. Section 921.4(b) of the 1974 guidelines provided that "various sub-categories will be developed and utilized as appropriate."

In 1981, a study was undertaken to assess the original biogeographic classification scheme and make recommendations, as necessary. A system with 27 subcategories was proposed. The subcategories fit within the original scheme and further define the coastal areas to assure adequate sanctuary representation (Clark. *Assessing the National Estuarine Sanctuary Program: Action Summary*, March 1982, cited as *The Clark Report*).

*The Clark Report* also recommends consideration of an estuarine typology in evaluating and selecting sites. The typology system recognizes that there are significant differences in estuary characteristics not related to regional location. Such factors include water source, water depth, type of circulation, inlet dynamics, basin configuration, watershed type, and dominant ecological community.

The final regulations adopt the revised biogeographic classification scheme and the recommendation to consider typology in site selection (see § 921.3).

**(2) Site Designation**

Eligible states may apply for preacquisition awards to aid in selecting an estuarine site in conformity with the classification scheme and typology system. A description of the site selection process to be carried out by the state, including a provision for public participation in the process, must be submitted for NOAA's approval. This ensures that the procedures for the site selection process are planned prior to implementing the selection process and approval of the preacquisition award. Figure 1 depicts the entire designation process.

After selection of a site, a draft management plan is prepared. Requiring the development of a comprehensive draft management plan in the preacquisition phase is designed to guarantee that early in the estuarine sanctuary designation process the state considers management policies, an acquisition and construction plan (including schedules and priorities), staffing requirements, a research component, interpretive and education plans, future funding and other resource requirements, and alternatives. Draft and final environmental impact statements (EIS) are prepared analyzing the environmental and socioeconomic



impacts of establishing a sanctuary and implementing the draft management plan. The EIS is prepared in accordance with National Environmental Policy Act (NEPA) procedures, including provisions for public comment and hearings.

Following NOAA approval of the

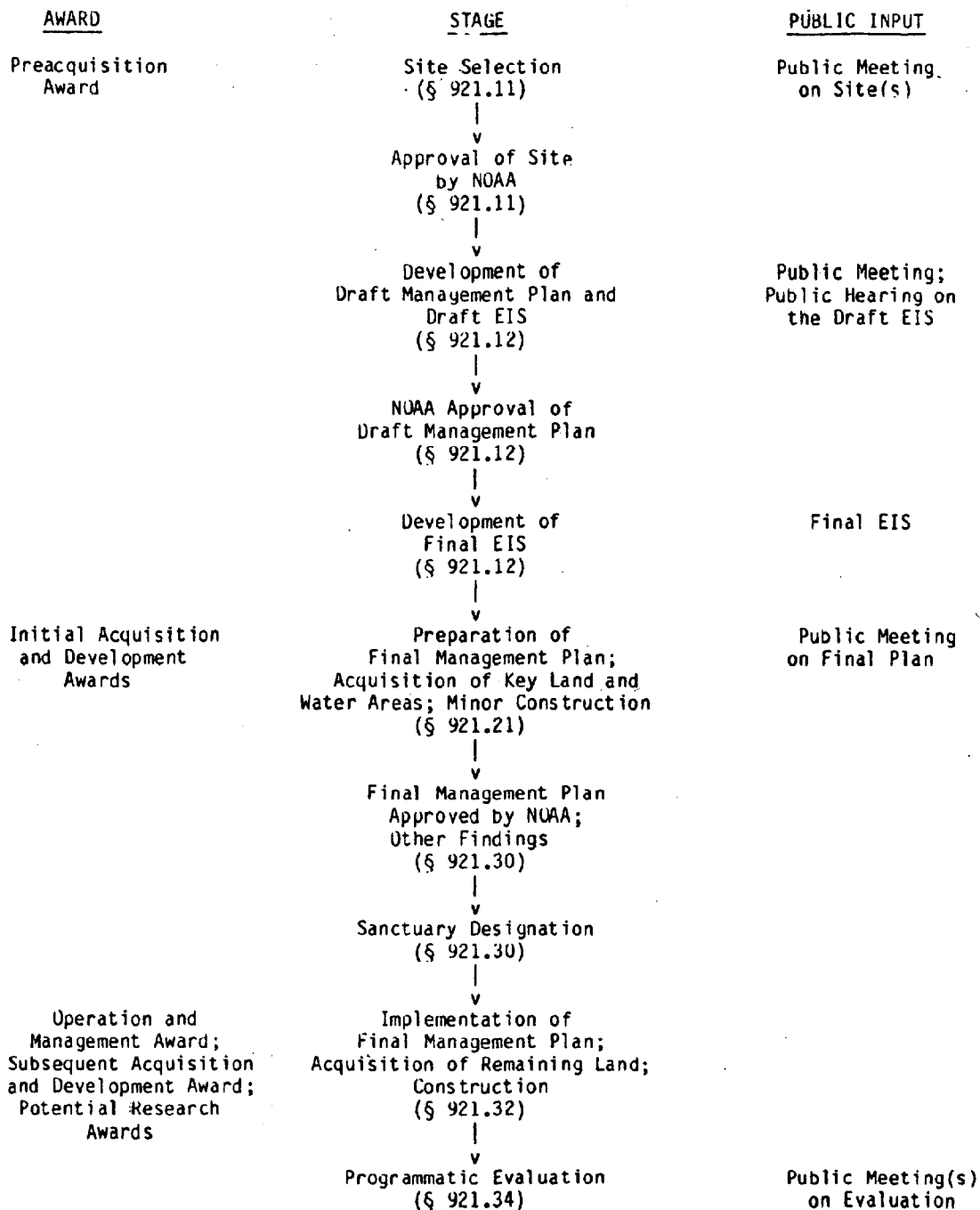
draft management plan and the final EIS, the site enters an initial acquisition and development phase. The state is then eligible for an initial acquisition and development award. During this phase, award funds may be used to purchase land, construct minor facilities

(subject to pre-designation construction policies, see § 921.21), prepare the final management plan, and initiate onsite research and education programs. All of these tasks are to be carried out in conformance with the NOAA-approved draft management plan.

BILLING CODE 3510-08-M



Figure 1. National Estuarine Sanctuary Program Designation Process



BILLING CODE 3510-08-C



The task under the initial acquisition and development phase should be completed within two years. At this point, NOAA must make formal findings, as specified § 921.30, that the final management plan has been completed and is approved, that the key land and water areas as specified in the management plan are under state control, and that a memorandum of understanding between the state and NOAA concerning the state's long-term commitment to the sanctuary has been signed. After NOAA makes these findings, the sanctuary is considered "designated". The state then begins implementation of the final management plan, including the construction of necessary facilities and additional land acquisition. The state is also eligible for operation and management awards to provide assistance in implementing the final management plan.

The regulations also provide procedures for the programmatic evaluation of a sanctuary during the period of the operation and management awards (or under the initial acquisition and development award if the sanctuary is not designated within two years) and for a continuing, biennial review of an estuarine sanctuary after Federal funding has expired. Procedures for withdrawing designation, if a sanctuary fails to meet established standards, have been added (§ 921.35).

To foster scientific studies within national estuarine sanctuaries, NOAA is setting aside funds for research within sites with approved final management plans. This is a separate category of financial assistance from the operation and management or acquisition and development support. The research funding is described in Subpart E.

Financial assistance requirements and procedures have been revised. The programmatic information required for each type of award is specified in the appropriate sections—in preacquisition (Subpart B); acquisition and development (Subpart C); and operation and management (§ 921.32). General financial assistance information is provided in Subpart F.

In summary, the regulations include more standards and guidelines for states to follow in developing and operating a national estuarine sanctuary, as well as additional guidelines for NOAA in overseeing the Program. Based on experience and from discussions with several states with estuarine sanctuaries, NOAA has found that the previous lack of guidance raised many concerns about what an estuarine sanctuary should be, the state's role in developing and operating a sanctuary, and how decisions should be made. The

regulations ensure that a state will have adequate flexibility in long-term operation of an estuarine sanctuary to deal with changing circumstances. The regulations require more information about the sanctuary, particularly through the development of a site-specific management plan, prior to each step in the funding process. In this manner, it is expected that decisions affecting the sanctuary and management priorities will be planned for in advance, rather than in an *ad hoc* fashion.

#### IV. Summary of Significant Comments on the Proposed Regulations and NOAA's Responses

Comments were received from 17 sources. Commenters included Federal and state agencies, representatives of the oil and gas industry, representatives of the electric utility industry, and environmental and public interest groups. All comments received are on file at the Sanctuary Programs Division, Office of Ocean and Coastal Resource Management, 2001 Wisconsin Avenue, NW., Room 334 Washington, D.C. 20235. The comments are available for review at that office. Each of the major issues raised by the commenters has been summarized and NOAA's response provided under the relevant subheading in this section.

##### General

##### Impact on Existing Sanctuaries

One commenter suggested that the final regulations indicate the impact of the changes on existing sanctuaries.

**Response:** The changes in procedure reflected in these regulations will improve the Program's operation and the effective implementation of national estuarine sanctuaries over time. They will therefore be applied to existing sanctuaries to the degree practicable.

##### Public Participation

Because of the potential impacts resulting from an area being designated as a national estuarine sanctuary, one commenter noted that the maximum opportunity for the participation of interested persons should be provided. The commenter encouraged NOAA to ensure that states comply with the conditions of §§ 921.11(d) and 921.12(d). The commenter recommended that a careful review of all established and potential industrial activities be undertaken to ensure a well-balanced decision on the site's suitability for designation as a national estuarine sanctuary.

**Response:** NOAA agrees with the comment on the importance of public participation. Public participation efforts

by the states, in conjunction with NOAA, are mandated by these regulations as an integral part of site selection, designation, and management.

The Program's purpose is to establish selected estuarine areas as sanctuaries to serve as natural field laboratories and provide opportunities for long-term research, education, and interpretation. Because of this, the present and future uses of such an area are certainly an important factor in considering whether it should be a national estuarine sanctuary.

It is also important to emphasize that the Program does not involve broad scale regulation on land uses apart from that already undertaken by the state or proposed by the state under its own applicable authorities. Multiple use of national estuarine sanctuaries is encouraged (see § 921.1(d)). Resource protection is, however, the highest priority goal of the National Estuarine Sanctuary Program and uses must be compatible with long-term resource protection. Within national estuarine sanctuaries, states may impose certain regulatory controls to ensure the continued protection of sanctuary resources. Areas proposed for designation are evaluated through the EIS process with opportunities for public comment.

##### Section-by-Section Analysis

##### Subpart A—General

##### Section 921.1—Mission and Goals.

(1) Several commenters supported the Program Mission and Goals and found them to be a substantial improvement over the 1974 guidelines and 1977 proposed regulations.

**Response:** The Mission and Goals were established to guide continued effective implementation of the National Estuarine Sanctuary Program. Program experience over the past several years led to the development of refinements designed to improve the original guidelines.

The concept of a national estuarine sanctuary does not easily merge with that of existing natural resource protection programs, such as wildlife refuges or parks. National estuarine sanctuaries are designed to ensure protection of a natural habitat unit in which long-term research and educational projects can be focused. A primary aim of these research and education projects is to provide information to states that is useful for decisionmaking concerning the development or protection of its coast and associated resources.



National estuarine sanctuaries are not established primarily for recreational pursuits, although compatible uses are encouraged. Sanctuaries are also not intended solely to enhance habitat for a single species by modification of the natural character of the estuarine system.

The final regulations, including the Mission and Goals, are designed to clarify the definition and function of a national estuarine sanctuary.

(2) Another commenter, however, suggested that the section on Mission and Goals, which replaced the "Policy and Objectives" section of the 1974 guidelines, expands the scope of the Program in ways not originally intended. The commenter suggested that Goal 2 (concerning research) was adequate, and that the other three should be deleted. The commenter suggested that the first goal, concerning long-term management planning, should be left to the National Marine Sanctuary Program or state coastal zone programs. The commenter further suggested that the third goal, involving enhancement of public awareness through interpretation, should also be dropped even though it was recognized that such interpretive efforts often stem from scientific research. Finally, the commenter suggested that the fourth goal, involving stimulating Federal-state cooperation to promote the management of estuarine areas, should be dropped since it allegedly provides the Federal government with more authority than needed. The commenter supports this view by citing legislative history to assert that the Act "authorizes Federal grants-in-aid, but makes no attempt to diminish State authority through Federal preemption."

The same commenter generally questions the need for the National Estuarine Sanctuary Program and need for revisions to the existing program. The commenter encouraged NOAA to examine the legal and scientific bases for the estuarine sanctuary program and to ensure that the regulations conform to the intended goals of the Coastal Zone Management Act.

*Response:* The Mission and Goals described in Section 921.1 are in no way an expansion of the Program. Rather they reflect the legislative history and a synthesis of the Program's past experience and need for basic policy guidance. Goals 2 and 3 are both valid; since both education and interpretive efforts are natural outgrowths of science. The first goal, involving management planning, represents a logical mechanism for achieving Program purposes with maximum utility and a minimum amount of waste.

NOAA disagrees with the commenter on Goal 4. The purpose of the goal is to ensure the protection of selected estuarine areas. Federal/state cooperative efforts to ensure such protection are emphasized; the Federal role encompasses more than grants-in-aid, but includes continuing evaluation and coordination of research and education to ensure that the sites remain as natural field laboratories consistent with the legislative intent.

NOAA has based these revised regulations on the Act and its legislative history. Through experience with the Program, NOAA has made certain refinements to the process. In fact, by explicitly providing for Section 312 evaluations (as required by the Coastal Zone Management Act) as seeking to coordinate research and education from the national level, the Program has made significant strides to fulfill the Congressional intent (see §§ 921.1(c) and 921.34).

(3) One reviewer felt that the idea of coordinating research and education information expressed in § 921.1(c) was a good idea, but should be carefully thought out and developed in coordination with individual states.

*Response:* NOAA is now in the process of developing a detailed plan for coordinating research and education. Comments from states and other interested groups are being actively solicited in preparing this plan.

(4) Several commenters strongly supported the concept in § 921.1(d) of encouraging multiple use of estuarine sanctuaries. One of the same commenters also supported the statement in Section 921.11(c)(5) that the site selection process consider "the site's compatibility with existing and potential land and water use in contiguous areas."

*Response:* NOAA is strongly committed to the concept of multiple use in estuarine sanctuaries as long as the purposes for which the sanctuary is established are maintained. Therefore it is important that site selection efforts closely analyze existing and potential uses of the area and adjacent areas.

*Section 921.3—Biogeographic Classification Scheme.* (1) One state requested that the goal of one site per region be revised to allow for more sites per region based on the estuarine typology system. The commenter noted that only by including several sites per region could all significant national variation be included. The commenter suggested that outright acquisition was not always necessary. The alternative suggested was to incorporate into the National Estuarine Sanctuary Program those sites, as appropriate, that are

owned by a state or conservation group. In this way actual ownership would not be as important as the site's value to the Program.

*Response:* NOAA believes that the inclusion of representatives of all national estuarine variations would be impracticable from a management perspective. It should be noted that control of estuarine land and water areas is only one facet in sanctuary designation. Properties already owned by the state or a conservation group may not comprise a natural unit or have the research and educational foundation required by the Program. Such areas are already in a protected status and are available for research and educational purposes, along with those regional representatives comprising the National Estuarine Sanctuary system. Adding these sites to the Program may not serve beneficial purposes. Thus, while the biogeographic classification scheme sets the initial parameters within which detailed site selection and analysis is focused, it should not be considered alone. Many other factors must be considered.

Within regions without an estuarine sanctuary, however, the non-acquisition alternatives suggested by the commenter will be utilized to the greatest degree possible.

(3) Another commenter was concerned that implementation of the biogeographic classification scheme on the basis of one site per region would lead to too many estuarine sanctuaries.

*Response:* As detailed in *The Clark Report*, the classification scheme and estuarine typology are designed to provide the Program with an array of sanctuaries broadly reflective of our Nation's estuarine zones. Only with this diversity of sites can the Program produce beneficial research and educational projects useful in coastal decisionmaking. There are presently 14 biogeographic regions represented in the system.

(4) Another commenter stated that by including 27 regions, and providing for one site per region, NOAA has extended the Program in an unwarranted manner. The commenter recommended instead that NOAA use the classification scheme in the Program Development Plan for the National Marine Sanctuary Program which relied on eight regions.

*Response:* Estuarine sanctuaries, in order to be beneficial for long-term research and educational purposes, should reflect the Nation's coastal areas. The biogeographic classification scheme and estuarine typologies were developed from this premise as demonstrated in *The Clark Report*. In



identifying sites for potential marine sanctuary status, eight regions were used, but for administrative purposes rather than representativeness. On top of this scheme, a detailed marine classification scheme, developed solely for marine areas and illustrative of the Nation's oceans, was applied. As a result of this process, twenty-nine sites were selected by NOAA for placement on the Site Evaluation List (see 48 FR 35568 (1983)).

**Section 921.4(b)—Coordination With the National Marine Sanctuary Program.** One commenter was concerned about the possible duplication of time and effort if an area is established as an estuarine sanctuary and a marine sanctuary. The commenter requested that NOAA address the possibility of a dual designation and means by which both programs could coexist without generating serious problems.

**Response:** Section 921.4(b) is intended only to ensure that the National Estuarine Sanctuary Program and National Marine Sanctuary Program work closely together; this is particularly true in terms of management planning, research projects, and education/interpretive activities. It is also important to note that the Programs are not duplicative and could serve complementary purposes. The regulations have been clarified to provide that the boundaries of the national marine and estuarine sanctuaries would not overlap, even though they may be adjacent (similar to the case where a National Wildlife Refuge abuts a National Park).

#### Subpart B—Prerequisite: Site Selection and Management Plan Development

**Section 921.10—General.** (1) One state suggested that the \$50,000 Federal share was not enough to accomplish the goals of the prerequisite award (e.g., site selection and draft management plan development) and recommended that a small sum be set aside for site selection, and that other funds to prepare the draft plan be negotiated between the state and the Federal government based on the proposed sanctuary's complexity.

**Response:** Based on past experience, the \$50,000 Federal funding level, supplemented by state match, is adequate for site selection and draft plan development. Additional funds to complete the final plan are available under the acquisition and development award (see § 921.21).

(2) One commenter suggested that specific reference to the need for Federal agency coordination be included in Subpart B. Such coordination could

appropriately occur during the EIS process, but the commenter suggested that states may wish to involve Federal agencies with special expertise earlier during the site selection process.

**Response:** The regulations require that states seek the views of Federal agencies as well as other parties early in the site selection process (see §§ 921.11(d) and 921.12(a)(3)). Federal agencies will also be actively involved in the management planning process and EIS development (see § 921.12 (d) and (e)).

**Section 921.11—Site Selection.** (1) Several states suggested that the regulations address multiple-site national estuarine sanctuaries.

**Response:** Section 921.10(b) has been revised to specifically reference multiple-site systems within the National Estuarine Sanctuary Program.

(2) One commenter urged early and frequent public involvement in the designation and management of national estuarine sanctuaries. It was suggested that where the proposed regulations limit notice to the local media (for example in § 921.11(d) concerning preliminary site selection), notice should also be made in the Federal Register since not all parties interested in the proposed designation live in the adjacent area and the Program has a broad national interest.

**Response:** This change has been made (see § 921.11(d)).

**Section 921.12—Management Plan Development.** (1) One state noted that § 921.12(b), concerning management plan development, should include a description of the sanctuary administrative structure as a required plan component. It was suggested that the plan should at least outline the staff's roles for research, education/interpretation, and enforcement.

**Response:** NOAA agrees and language to this effect has been added at § 921.12(b)(2).

(2) One state suggested that an environmental impact statement not be required in all cases. Rather, in less complex situations, the flexibility to prepare an environmental assessment should be left open.

**Response:** NOAA disagrees. Based on experience with the program, an environmental assessment is not an adequate mechanism to fully consider the environmental and socioeconomic impacts of a proposed national estuarine sanctuary, particularly where a management program is being proposed. Further, it does not provide for the extensive public review required through the NEPA process. We believe that designation of any site qualifies as

a significant Federal action for the purposes of the NEPA EIS requirement.

(3) One commenter noted that since resource protection is a primary program goal, the regulations should specify that the plan detail responsibilities for surveillance and enforcement of human activities.

**Response:** NOAA agrees and the regulations (at § 921.12(b)(8)) have been revised to require that responsibilities for surveillance and enforcement be detailed in the management plan.

(4) One commenter questioned the usefulness of the NOAA-state memorandum of understanding (MOU), which is required as part of the management plan (see § 921.12 (a)(5) and (b)(10)). The commenter suggested that the MOU could not be considered legally binding on future legislatures.

**Response:** The MOU emphasizes the significance of establishing an estuarine sanctuary and recognition by the state and Federal government of the long-term commitment to management of the area in accordance with the agreed-upon goals and objectives. The MOU spells out, at the beginning of the process, the roles of the Federal and state governments, and what is expected of each party. It will clearly indicate that each party is aware of its commitment and responsibilities at the beginning of the process. The MOU emphasizes that lands acquired under the National Estuarine Sanctuary Program must continue to be used in a manner consistent with sanctuary purposes.

(5) Several states approved requiring the management plan early in the process as a guide to future decisions before the expenditure of substantial funds. Other commenters, however, expressed concern that requiring the preparation of a draft management plan prior to any commitment to the site from NOAA could lead to the waste of extensive staff time, public participation, and resources.

**Response:** These regulations are predicated upon ten years of experience in administering the National Estuarine Sanctuary Program. The regulations are intended to rectify many of the problems that have occurred in specific sanctuaries in the past. Many of these problems could have been foreseen and overcome by thoughtful, pre-sanctuary planning. Thus, NOAA is strongly supportive of developing a management plan early in the decision process. The concern that NOAA is not committed to the state during the draft management plan process is unwarranted given the procedures specified in the regulations. NOAA's financial commitment begins with the prerequisite award for site



selection and continues through all the developmental stages. NOAA may support up to one-half of the total costs of establishing a particular sanctuary. NOAA's programmatic commitment to a proposed sanctuary begins with approval of a site and continues through the management plan review and preparation of the EIS. If the sanctuary proposal is approved, and if the requirements of the preacquisition phase are met, NOAA will proceed with establishing the site as a national estuarine sanctuary.

Decision points early in the process provide opportunities for either party to withdraw before too much time and effort have been committed.

(6) In terms of § 921.12(b)(7), one commenter suggested that the schedule for acquisition, required as part of the management plan, was useful as a guide, but not as a rigid planning document.

*Response:* NOAA views the acquisition strategy as a flexible planning tool. It does, however, identify key areas where acquisition should be focused and acquisition priorities developed. The strategy will also contain alternatives (including boundary changes) if selected priority areas eventually cannot be acquired.

(7) One commenter suggested that the requirements for the draft management plan should reference three additional elements, all of which were included in the 1974 guidelines: (1) Definitions of permitted, compatible, restricted and prohibited uses; (2) a monitoring plan to ensure that the integrity of the sanctuary is maintained; and (3) a description of the authorities which will be put in place to manage the Sanctuary and enforce the policy and use restrictions.

*Response:* A resource protection plan requirement has been added (see § 921.12(b)(8)) which encompasses elements (1) and (3). A monitoring plan should be included as part of the research plan (see § 921.12(b)(3)).

#### Subpart C—Development and Preparation of the Final Management Plan

**Section 921.21—Initial Acquisition and Development Awards.** (1) One state noted that the limit of 5 percent of the initial acquisition and development awards which may be expended on minor construction activities which aid in implementing portions of the management plan may not be adequate for multiple-site systems.

*Response:* After careful consideration, NOAA has determined that necessary construction can be planned for and included as part of the initial award. The intent of this restriction is to limit

large capital expenditures until a final plan is prepared and substantial progress in land acquisition has been made.

**Section 921.32—Operation and Management: Implementation of the Management Plan.** (1) One state suggested the \$250,000 cap on federal funding for operation and management in Section 921.32(b) should be modified to provide for additional funds based on need.

*Response:* The Program is designed to assist states in establishing estuarine sanctuaries. Funds are provided for an initial period of implementation; thereafter the states must assume responsibility for continued operation.

**Section 921.33—Boundary Changes and Amendments to the Management Plan.** (1) Several states requested that this section be modified to apply only to laws specifically applicable to the sanctuary, and not general environmental quality laws such as for air and water.

*Response:* Section 921.33 has been clarified to reflect this point.

(2) One commenter recommended that public notice and opportunity to comment be provided in all cases where boundaries are changed or management plans are amended under § 921.33.

*Response:* The proposed regulations provide that if NOAA determines it is necessary, public notice and an opportunity for comment on boundary changes and changes to the final management plan will be provided. Major changes do require public notice and opportunity for comment and, in certain cases, preparation of an environmental assessment. Thus, the clear intent of these regulations is to provide for public notice where applicable. There may, however, be times where changes to the management plan are minor and will not require such notice.

#### **Section 921.34—Program Evaluation.**

(1) One commenter specifically questioned the value of Section 312-type evaluations of sanctuary performance; the commenter stated that performance reports, which are required as a condition of the financial award, are adequate for NOAA's purposes.

*Response:* Performance reports are of course helpful. But such reports do not address the specific range and depth of issues needed to assess the effectiveness of sanctuary operation and opportunities for improvement. In addition during an evaluation, individuals or groups that are, or should be, involved in sanctuary management or are affected by the sanctuary are contacted. This provides NOAA with valuable feedback that is necessary to

gauge the effectiveness of the sanctuary's program.

(2) The same commenter as in (1) also questioned the value of a program evaluation after Federal funding expires.

*Response:* The required evaluations will ensure that sanctuary objectives, as specified in the management plan, are still being attained and that proposed boundary changes and amendments to the management plan can be reviewed. The evaluations will ensure that the purposes for which the sanctuary was established continue to be met and that the site meets the criteria of the national system.

After Federal funding expires, the state is required to submit an annual report on the sanctuary. The report will detail program successes and accomplishments in implementing the policies and activities described in the sanctuary management plan. The report also should propose a work plan for the next year of sanctuary operations and describe the state's role in ongoing sanctuary programs. Inadequate annual reports will trigger a full-scale evaluation with a site visit. In addition, on a periodic basis, NOAA will also conduct a full-scale Section 312 evaluation with a site visit.

**Section 921.35—Withdrawal of Designation.** (1) Several reviewers suggested that the section on the withdrawal of designation be modified, to allow the applicable state to participate in decisions regarding the disposition of property.

*Response:* The state will of course be consulted by NOAA in any decision regarding property disposition, which will be carried out according to Attachment N of OMB Circular A-102, Revised, and these regulations.

(2) Several reviewers questioned, in the event of withdrawal of sanctuary designation, the method of disposal for property held in less-than-fee simple or controlled by a lease.

*Response:* Section 921.21(e) [which was § 921.35(e) in the proposed regulations] would be followed to the extent it applies. Leasehold and other real property interests purchased in whole or in part with Federal funds are subject to the provisions of Attachment N, OMB Circular A-102, Revised.

(3) Another state requested that the deed language be rewritten so that a state would be "entitled to retain title to property which the state determines is no longer needed for grant purposes, so long as the property is used for other purposes approved by NOAA as being consistent with the sanctuary program."

*Response:* When property purchased in fee simple or less-than-fee simple is



no longer used for the purposes of the National Estuarine Sanctuary Program. NOAA is required to dispose of the property according to the provisions of Attachment N, OMB Circular A-102, Revised. These provisions are essentially the same as stated in § 921.21 (e) of the final regulations.

(4) One commenter suggested that specific criteria and an appeals procedure (including public notice of the proposed withdrawal of designation) be added to the regulations.

**Response:** As specified in §§ 921.34 and 921.35, NOAA's continuing evaluation of sanctuary performance will examine the state's performance in upholding the mandate of Section 315 of the Act, the national Program goals, and the policies established in the management plan. Specific criteria to judge these factors cannot be enumerated, but will be examined on a case-by-case basis. Section 921.35 spells out a procedure for withdrawal of designation, including an appeal to the Assistant Administrator for Ocean Services and Coastal Zone Management.

(5) One state questioned who would decide the "current fair market value" of lands slated for withdrawal of designation in § 921.35(e)(i) [now § 921.21(e)(i)]. It was recommended that an arbitration system of three independent appraisers or comparable system be established.

**Response:** Fair market value would be determined by an independent appraiser (e.g., certified real property appraiser or GSA representatives) and certified by a responsible official of the state, as provided by Attachment F of OMB Circular A-102, Revised.

#### Subpart E—Research Funds

(1) Several reviewers suggested that research funds be offered on a 100 percent Federal basis, i.e., without a state match requirement.

**Response:** Section 315 of the Coastal Zone Management Act requires that all funds to coastal states for national estuarine sanctuary purposes be provided on a fifty-fifty matching basis.

(2) Other commenters suggested that funding limits and the total research budget be discussed in the regulations.

**Response:** Funding limits and the total Federal funds for research in national estuarine sanctuaries will vary from year-to-year; thus, these figures are not included in the final regulations. NOAA will, however, distribute information about the relative funding limits and funding totals. Such information will be sent to states with national estuarine sanctuaries and to other interested parties.

#### Subpart F—General Financial Assistance Provisions

(1) One state criticized the exclusion of land as state match for the operation and management awards. The state found such an exclusion to be an undue constraint upon management and operation alternatives available to states.

**Response:** In order to maximize the support provided to a sanctuary during its early years, NOAA has precluded land as match for the operation and management award. To a reasonable degree, state match should relate to the purpose of the particular award. Since the purpose of the operation and management award is to provide for the sanctuary's operation and implementation of the management plan, the use of land as match is inappropriate, particularly since land acquisition should be well underway prior to the state's receiving an operation and management award. The allowable categories of match (see § 921.51(e)) provide the state with sufficient flexibility.

#### Appendix 2—Estuarine Typology

(1) One reviewer stated that in Group III—Chemical, the proposed salinity limits were particularly confusing. The reviewer noted that a salinity zone of 10 ppt to 20 ppt is very important because numerous estuaries possess waters in this salinity range, but the proposed polyhaline zone is too broad to describe this. The reviewer included the following table of salinity ranges from *Introduction to Marine Biology* by Mosby:

Salinity (0/00)	Type of water
0 to 0.5	Fresh water.
0.5 to 3.0	Oligohaline brackish water.
3.0 to 10	Mesohaline brackish water.
10.0 to 17	Polyhaline brackish water.
17 to 30	Oligohaline seawater.
30 to 34	Mesohaline seawater.
34 to 38	Polyhaline seawater.
>38	Brine.

From Valkanas, I. 1933. Über die Biologie der Ostsee als Brackwassergebiet. Verh. int. Verein. theor. angew. Limnol. 6:1.

**Response:** Polyhaline should be 30 ppt to 18 ppt; the "5" was a typographical error. NOAA considered the information provided, but has decided to continue to use the proposed salinity ranges which are from *Ecology of Inland Waters and Estuaries* (Reid and Wood, 1976). This is the standard limnology test used in college. The table used as an example is from a 1933 paper; the salinity table used in the typology is the widely accepted "Venice System" adopted in 1958.

(2) The same reviewer also questioned the pH values suggesting that a pH of 5.5

is somewhat acid. It was suggested that the circumneutral range should be 6.5 rather than 5.5.

**Response:** For the reasons indicated in the above response, we decided to continue with the proposed system.

(3) Another reviewer stated that in Group II—Transition Areas, the description of coastal marshes and coastal mangroves as the only coastal wetland transition areas is too narrow. Other wetland areas (marshes, swamps, bogs) should be included.

**Response:** A new subtitle "Coastal Marshes and Swamps" has been added.

(4) Another commenter stated that the typology did not appear to contain criteria which adequately describe a Great Lakes-type site.

**Response:** Great Lakes areas can fall under Class II, Group I.B (Basin Structure); I.C (Inlet Type); LD. (Bottom Composition); Group II.A (Circulation); II.C (Freshwater); and Group III—Chemical.

#### V. Other Actions Associated With the Proposed Rulemaking

##### (A) Classification Under Executive Order 12291

NOAA has concluded that these regulations are not major because they will not result in:

(1) An annual effect on the economy of \$100 million or more;

(2) A major increase in costs or prices for consumers, individual industries, Federal, state or local government agencies, or geographic regions; or

(3) Significant adverse effects on competition, employment, investment, productivity, innovation or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

These final rules amend existing procedures for selecting and processing potential national estuarine sanctuaries in accordance with a revised biogeographic classification scheme and estuarine typologies. These rules establish a revised process for identifying, designating and managing national estuarine sanctuaries. They will not result in any direct economic or environmental effect nor will they lead to any major indirect economic or environmental impacts.

##### (B) Regulatory Flexibility Act Analysis

The General Counsel of the Department of Commerce certified to the Small Business Administration that this rule will not have a significant economic impact on a substantial number of small entities. Thus, regulatory Flexibility Analysis is not



required for this notice of final rulemaking. The regulations set forth procedures for identifying and designating national estuarine sanctuaries, and managing sites once designated.

These rules do not directly affect "small government jurisdictions" as defined by Pub. L. 96-354, the Regulatory Flexibility Act, and the rules will have no effect on small businesses.

(C) *Paper Work Reduction Act of 1980* (Pub. L. 96-511)

These regulations do not impose any information requirements of the type covered by Pub. L. 96-511 other than those already approved by the Office of Management and Budget (approval number 0648-0121) for use through September 30, 1986.

(D) *National Environmental Policy Act*

NOAA has concluded that publication of these rules does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement is not required.

#### List of Subjects in 15 CFR Part 921

Administrative practice and procedure, Coastal zone, Environmental protection, Natural resources, Wetlands. (Federal Domestic Assistance Catalog Number 11.420 Estuarine Sanctuary Program)

Dated: February 29, 1984.

Paul M. Wolff,

Assistant Administrator for Ocean Services and Coastal Zone Management.

Accordingly, 15 CFR Part 921 is revised as follows:

### PART 921—NATIONAL ESTUARINE SANCTUARY PROGRAM REGULATIONS

#### Subpart A—General

Sec.

921.1 Mission and goals.

921.2 Definitions.

921.3 National Estuarine Sanctuary Biogeographic Classification Scheme and Estuarine Typologies.

921.4 Relationship to other provisions of the Coastal Zone Management Act and to the National Marine Sanctuary Program.

#### Subpart B—Preacquisition: Site Selection and Management Plan Development

921.10 General.

921.11 Site selection.

921.12 Management Plan development.

#### Subpart C—Acquisition, Development, and Preparation of the Final Management Plan

921.20 General.

921.21 Initial acquisition and development awards.

#### Subpart D—Sanctuary Designation and Subsequent Operation

Sec.

921.30 Designation of National Estuarine Sanctuaries.

921.31 Supplemental acquisition and development awards.

921.32 Operation and management: Implementation of the Management Plan.

921.33 Boundary changes, Amendments to the Management Plan, and addition of multiple-site components.

921.34 Program evaluation.

921.35 Withdrawal of designation.

#### Subpart E—Research Funds

921.40 General.

921.41 Categories of potential research projects: evaluation criteria.

#### Subpart F—General Financial Assistance Provisions

921.50 Application information.

921.51 Allowable costs.

921.52 Amendments to financial assistance awards.

Appendix 1—Biogeographic Classification Scheme

Appendix 2—Typology of National Estuarine Areas

Authority: Sec. 315(l), Pub. L. 92-583, as amended; 86 Stat. 1280 (16 U.S.C. 1461(l)).

#### Subpart A—General

##### § 921.1 Mission and goals.

(a) The mission of the National Estuarine Sanctuary Program is the establishment and management, through Federal-state cooperation, of a national system of estuarine sanctuaries representative of the various regions and estuarine types in the United States. Estuarine sanctuaries will be established to provide opportunities for long-term research, education, and interpretation.

(b) The goals of the Program for carrying out this mission are:

(1) Enhance resource protection by implementing a long-term management plan tailored to the site's specific resources;

(2) Provide opportunities for long-term scientific and educational programs in estuarine areas to develop information for improved coastal decisionmaking;

(3) Enhance public awareness and understanding of the estuarine environment through resource interpretive programs; and

(4) Promote Federal-state cooperative efforts in managing estuarine areas.

(c) To assist the states in carrying out the Program's goals in an effective manner, the National Oceanic and Atmospheric Administration (NOAA) will coordinate a research and education information exchange throughout the national estuarine sanctuary system. As part of this role, NOAA will ensure that information and

ideas from one sanctuary are made available to others in the system. The network that will be established will enable sanctuaries to exchange information and research data with each other, with universities engaged in estuarine research, and with Federal and state agencies. NOAA's objective is a system-wide program of research and monitoring capable of addressing the management issues that affect long-term productivity of our Nation's estuaries.

(d) Multiple uses are encouraged to the degree compatible with the sanctuary's overall purpose as provided in the management plan and consistent with subsections (a) and (b), above. Use levels are set by the individual state and analyzed in the management plan. The sanctuary management plan (see § 921.12) will describe the uses and establishes priorities among these uses. The plan shall identify uses requiring a state permit, as well as areas where uses are encouraged or prohibited. In general, sanctuaries are intended to be open to the public; low-intensity recreational and interpretive activities are generally encouraged.

(e) Certain manipulative research activities may be allowed on a limited basis, but only if specified in the management plan and only if the activity is consistent with overall sanctuary purposes and the sanctuary resources are protected. Manipulative research activities require the prior approval of the state and NOAA. Habitat manipulation for resource management purposes is not permitted within national estuarine sanctuaries.

(f) While the Program is aimed at protecting natural, pristine sites, NOAA recognizes that many estuarine areas have undergone ecological change as a result of human activities. Although restoration of degraded areas is not a primary purpose of the Program, some restorative activities may be permitted in an estuarine sanctuary as specified in the management plan.

(g) NOAA may provide financial assistance to coastal states, not to exceed 50 percent of all actual costs, to assist in the designation and operation of national estuarine sanctuaries (see section 921.51(e)). Three types of awards are available under the National Estuarine Sanctuary Program. The *preacquisition award* is for site selection and draft management plan preparation. The *acquisition and development award* is intended primarily for land acquisition and construction purposes. The *operation and management award* provides funds to assist in implementing the research, educational, and administrative



programs detailed in the sanctuary management plan. Under the Act, the Federal share of funding for a national estuarine sanctuary shall not exceed \$3,000,000. At the conclusion of Federal financial assistance, funding for the long-term operation of the sanctuary becomes the responsibility of the state.

(h) Lands already in protected status by another Federal, state, local government or private organization can be included within national estuarine sanctuaries only if the managing entity commits to long-term non-manipulative management. Federal lands already in protected status cannot comprise the key land and water areas of a sanctuary (see § 921.11(c)(3)).

#### § 921.2 Definitions.

(a) "Act" means the Coastal Zone Management Act, as amended, 16 U.S.C. 1451 *et seq.* Section 315(1) of the Act, 16 U.S.C. 1461(1), establishes the National Estuarine Sanctuary Program.

(b) "Assistant Administrator" (AA) means the Assistant Administrator for Ocean Services and Coastal Zone Management, National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, or his/her successor or designee.

(c) "Coastal state" means a state of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of this title, the term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Marianas, and the Trust Territories of the Pacific Islands, and American Samoa (see 16 U.S.C. 1454(4)).

(d) "Estuary" means that part of a river or stream or body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term also includes estuary-type areas of the Great Lakes, see 16 U.S.C. 1454(7).

(e) "National Estuarine Sanctuary" means an area, which may include all or the key land and water portion of an estuary, and adjacent transitional areas and uplands, constituting to the extent feasible a natural unit, set aside as a natural field laboratory to provide long-term opportunities for research, educational, and interpretation on the ecological relationships within the area (see 16 U.S.C. 1454(8)).

#### § 921.3 National Estuarine Sanctuary Biogeographic Classification Scheme and Estuarine Typologies.

(a) National estuarine sanctuaries are chosen to reflect regional differences

and to include a variety of ecosystem types. A biogeographic classification scheme based on regional variations in the nation's coastal zone has been developed. The biogeographic classification scheme is used to ensure that the National Estuarine Sanctuary System includes at least one site from each region. The estuarine typology system is utilized to ensure that sites in the Program reflect the wide range of estuarine types within the United States.

(b) The biogeographic classification scheme, presented in Appendix 1, contains 27 regions. Figure 2 graphically depicts the biogeographic regions of the United States.

(c) The typology system is presented in Appendix 2.

#### § 921.4 Relationship to other provisions of the Coastal Zone Management Act and to the National Marine Sanctuary Program.

(a) The National Estuarine Sanctuary Program is intended to provide information to state agencies and other entities involved in coastal zone management decisionmaking pursuant to the Coastal Zone Management Act, 16 U.S.C. 1451 *et seq.* Any coastal state, including those that do not have approved coastal zone management programs under section 306 of the Act, is eligible for an award under the National Estuarine Sanctuary Program (see § 921.2(e)).

(b) Where feasible, the National Estuarine Sanctuary Program will be conducted in close coordination with the National Marine Sanctuary Program (Title III of the Marine Protection, Research and Sanctuaries Act, as amended, 16 U.S.C. 1431-1434), also administered by NOAA. Title III authorizes the Secretary of Commerce to designate ocean waters as marine sanctuaries to protect or restore such areas for their conservation, recreational, ecological, or esthetic values. National marine and estuarine sanctuaries will not overlap, though they may be adjacent.

#### Subpart B—Preacquisition: Site Selection and Management Plan Development

##### § 921.10 General.

(a) A state may apply for a preacquisition award for the purpose of site selection and preparation of documents specified in § 921.12 (draft management plan and environmental impact statement (EIS)). The total Federal share of the preacquisition award may not exceed \$50,000, of which up to \$10,000 may be used for site selection as described in § 921.11.

Financial assistance application procedures are specified in Subpart F.

(b) In selecting a site, a state may choose to develop a multiple-site sanctuary reflecting a diversity of habitats in a single biogeographic region. A multiple-site sanctuary also allows the state to develop complementary research and educational programs within the multiple components of its sanctuary. Multiple-site sanctuaries are treated as one sanctuary in terms of financial assistance and development of an overall management framework and plan. Each individual component of a proposed multiple-site sanctuary shall be evaluated separately under § 921.11(c) as part of the site selection process. A state may propose to establish a multiple-site sanctuary at the time of the initial site selection, or at any point in the development or operation of the estuarine sanctuary, even after Federal funding for the single component sanctuary has expired. If the state decides to develop a multiple-site national estuarine sanctuary after the initial acquisition and development award is made on a single site, the proposal is subject to the requirements set forth in § 921.33. It should be noted, however, that the total funding for a multiple-site sanctuary remains at the \$3,000,000 limit; the funding for operation of a multiple-site sanctuary is also limited to the \$250,000 standard (see § 921.32(b)).

##### § 921.11 Site selection.

(a) A state may use up to \$10,000 in Federal preacquisition funds to establish and implement a site selection process which is approved by NOAA.

(b) In Addition to the requirements set forth in Subpart F, a request for Federal funds for site selection must contain the following programmatic information:

(1) A description of the proposed site selection process and how it will be implemented in conformance with the biogeographic classification scheme and typology (§ 921.3);

(2) An identification of the site selection agency and the potential management agency; and

(3) A description of how public participation will be incorporated into the process (see § 921.11(d)).

(c) As part of the site selection process, the state and NOAA shall evaluate and select the final site(s). NOAA has final authority in approving such sites. Site selection shall be guided by the following principles:

(1) The site's benefit to the National Estuarine Sanctuary Program relative to the biogeographic classification scheme



and typology set forth in § 921.3 and Appendices 1 and 2;

(2) The site's ecological characteristics, including its biological productivity, diversity of flora and fauna, and capacity to attract a broad range of research and educational interests. The proposed site should, to the maximum extent possible, be a natural system;

(3) Assurance that the site's boundaries encompass an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation. Boundary size will vary greatly depending on the nature of the ecosystem. National estuarine sanctuaries may include existing Federal or state lands already in a protected status, where mutual benefit can be enhanced, see § 921.51(e)(2). Importantly, however, NOAA will not approve a site for potential sanctuary status that is dependent upon the inclusion of currently protected Federal lands in order to meet the requirements for sanctuary status (such as key land and water areas). Such lands may only be included within a sanctuary to serve as a buffer or for other ancillary purposes:

(4) The site's importance for research, including proximity to existing research facilities and educational institutions; (*Comment:* NOAA is developing more detailed criteria for selecting potential national estuarine sanctuaries based upon research characteristics. Once these criteria are developed, a notice of their availability will be published in the *Federal Register*).

(5) The site's compatibility with existing and potential land and water uses in contiguous areas; and

(6) The site's importance to education and interpretive efforts, consistent with the need for continued protection of the natural system.

(d) Early in the site selection process, the state must seek the views of affected landowners, local governments, other state and Federal agencies, and other parties who are interested in the area(s) being considered for selection as a potential national estuarine sanctuary. After the local government and affected landowners have been contacted, at least one public meeting shall be held in the area of the proposed site. Notice of such a meeting, including the time, place, and relevant subject matter, shall be announced by the state through the area's principal news media at least 15 days prior to the date of the meeting and by NOAA in the *Federal Register*.

#### § 921.12 Management Plan development.

(a) After the selected site is approved by NOAA and the state, the state may request the remainder of the preacquisition funds to develop the draft management plan and environmental impact statement. The request must be accompanied by the information specified in Subpart F and the following programmatic information:

(1) An analysis of the site based on the biogeographic scheme/typology discussed in § 921.3 and set forth in Appendices 1 and 2;

(2) A description of the site and its major resources, including location, proposed boundaries, and adjacent land uses. Maps, including aerial photographs, are required;

(3) A description of the public participation process used by the state to solicit the views of interested parties, a summary of comments, and, if interstate issues are involved, documentation that the Governor(s) of the other affected state(s) has been contacted;

(4) A list of all sites considered and a brief statement of the basis for not selecting the non-preferred sites; and

(5) A draft management plan outline (see subsection (b) below) and an outline of a draft memorandum of understanding (MOU) between the state and NOAA detailing the Federal-state roles in sanctuary management during the period of federal funding and expressing the state's long-term commitment to operate and manage the sanctuary.

(b) After NOAA approves the state's request to use the remaining preacquisition funds, the state shall begin developing a draft management plan. The plan will set out in detail:

(1) Sanctuary goals and objectives, management issues, and strategies or actions for meeting the goals and objectives;

(2) An administrative section including staff roles in administration, research, education/interpretation, and surveillance and enforcement.

(3) A research plan, including a monitoring design;

(4) An interpretive plan (including interpretive, educational and recreational activities);

(5) A plan for public access to the sanctuary;

(6) A construction plan, including a proposed construction schedule, and drawings of proposed developments. If a visitor center, research center or any other facilities are proposed for construction or renovation at the site, a preliminary engineering report must be prepared;

*Note.*—Information on preparing a preliminary engineering report (PER) is provided in "Engineering and Construction Guidelines for Coastal Energy Impact Program Applicants" (42 FR 64830 (1977)), which is supplied to award recipients;

(7) An acquisition plan identifying the ecologically key land and water areas of the sanctuary, priority acquisitions, and strategies for acquiring these areas. This plan should identify ownership patterns within the proposed sanctuary boundaries; land already in the public domain; an estimate of the fair market value of land to be acquired; the method of acquisition, or the feasible alternatives (including less-than-fee techniques) for the protection of the estuarine area; a schedule for acquisition with an estimate of the time required to complete the proposed sanctuary; and a discussion of any anticipated problems;

*Note.*—As discussed in § 921.11(c)(3), if protected lands are to be included within the proposed sanctuary, the state must demonstrate to NOAA that the site meets the criteria for national estuarine sanctuary status independent of the inclusion of such protected lands.

(8) A resource protection plan detailing applicable authorities, including allowable uses, uses requiring a permit and permit requirements, any restrictions on use of the sanctuary, and a strategy for sanctuary surveillance and enforcement of such use restrictions, including appropriate government enforcement agencies;

(9) If applicable, a restoration plan describing those portions of the site that may require habitat modification to restore natural conditions; and

(10) A proposed memorandum of understanding (MOU) between the state and NOAA regarding the Federal-state relationship during the establishment and development of the national estuarine sanctuary, and expressing the long-term commitment by the state to maintain effectively the sanctuary after Federal financial assistance ends. In conjunction with the MOU and where possible under state law, the state will consider taking appropriate administrative or legislative action to ensure the long-term protection of the sanctuary. The MOU shall be signed prior to sanctuary designation. If other MOUs are necessary (such as with a federal agency or another state agency), drafts of such MOUs also must be included in the plan.

(c) Regarding the preparation of an environmental impact statement (EIS) under the National Environmental Policy Act on a national estuarine sanctuary proposal, the state shall provide all



necessary information to NOAA concerning the socioeconomic and environmental impacts associated with implementing the draft management plan and feasible alternatives to the plan. Based on this information, NOAA will prepare the draft EIS.

(d) Early in the development of the draft management plan and the draft EIS, the state shall hold a meeting in the area or areas most affected to solicit public and government comments on the significant issues related to the proposed action. NOAA will publish a notice of the meeting in the *Federal Register* and in local media.

(e) NOAA will publish a *Federal Register* notice of intent to prepare a DEIS. After the draft EIS is prepared and filed with the Environmental Protection Agency (EPA), a Notice of Availability of the DEIS will appear in the *Federal Register*. Not less than 30 days after publication of the notice, NOAA will hold at least one public hearing in the area or areas most affected by the proposed sanctuary. The hearing will be held no sooner than 15 days after appropriate notice by NOAA of the meeting has been given in the principal news media and in the *Federal Register*. After a 45-day comment period, a final EIS is prepared by NOAA.

#### Subpart C—Acquisition, Development, and Preparation of the Final Management Plan

##### § 921.20 General.

After NOAA approval of the site, the draft management plan and the draft MOU, and completion of the final EIS, a state is eligible for an acquisition and development award to acquire land and water areas for inclusion in the sanctuary and to construct research and educational facilities in accordance with the draft management plan. The acquisition and development award has two phases. In the initial phase, state performance should work to meet the criteria required for formal sanctuary designation, i.e., acquiring the key land and water areas as specified in the draft management plan and preparing the final plan. These requirements are specified in § 921.30. The initial acquisition and development phase is expected to last no longer than two years after the start of the award. If necessary, a longer time period may be negotiated between the state and NOAA. After the sanctuary is designated, funds may be used to acquire any remaining land and for construction purposes.

##### § 921.21 Initial acquisition and development awards.

(a) Assistance is provided to aid the recipient in: (1) Acquiring land and water areas to be included in the sanctuary boundaries; (2) minor construction, as provided in paragraphs (b) and (c) of this section; (3) preparing the final management plan; and (4) up to the point of sanctuary designation, for initial management costs, e.g., implementing the NOAA approved draft management plan, preparing the final management plan, hiring a sanctuary manager and other staff as necessary, and for other management-related activities. Application procedures are specified in Subpart F.

(b) The expenditure of Federal and state funds on major construction activities is not allowed during the initial acquisition and development phase. The preparation of architectural and engineering plans, including specifications, for any proposed construction is permitted. In addition, minor construction activities, consistent with paragraph (c) of this section also are allowed. The NOAA-approved draft management plan must, however, include a construction plan and a public access plan before any award funds can be spent on construction activities.

(c) Only minor construction activities that aid in implementing portions of the management plan (such as boat ramps and nature trails) are permitted under the initial acquisition and development award. No more than five (5) percent of the initial acquisition and development award may be expended on such facilities. NOAA must make a specific determination, based on the final EIS, that the construction activity will not be detrimental to the environment.

(d) Except as specifically provided in paragraphs (a)–(c) of this section, construction projects, to be funded in whole or in part under the acquisition and development award, may not be initiated until the sanctuary receives formal designation, see § 921.30.

**Note.**—The intent of these requirements and the phasing of the acquisition and development award is to ensure that substantial progress in acquiring the key land and water areas has been made and that a final management plan is completed before major sums are spent on construction. Once substantial progress in acquisition has been made, as defined by the state in the management plan, other activities guided by the final management plan may begin with NOAA's approval.

(e) Deeds for real property acquired for the sanctuary under acquisition funding shall contain substantially the following provision:

Title to the property conveyed by this deed shall vest in the [recipient of the CZMA Section 315 award or other Federally-approved entity] subject to the condition that the property shall remain part of the Federally-designated [name of National Estuarine Sanctuary]. In the event that the property is no longer included as part of the sanctuary, or if the sanctuary designation of which it is part is withdrawn, then the National Oceanic and Atmospheric Administration or its successor agency, in conjunction with the State, may exercise any of the following rights regarding the disposition of the property:

(i) The recipient may be required to transfer title to the Federal Government. In such cases, the recipient shall be entitled to compensation computed by applying the recipient's percentage of participation in the cost of the program or project to the current fair market value of the property; or

(ii) At the discretion of the Federal Government, (a) the recipient may either be directed to sell the property and pay the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the proceeds from the sale (minus actual and reasonable selling and fix-up expenses, if any, from the sale proceeds); or (b) the recipient may be permitted to retain title after paying the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the current fair market value of the property.

**Note.**—Fair market value of the property must be determined by an independent appraiser and certified by a responsible official of the state, as provided by OMB Circular A-102 Revised, Attachment F.

(f) Prior to submitting the final management plan to NOAA for review and approval, the state should hold a public meeting in the area affected by the estuarine sanctuary. NOAA will publish a notice of the meeting in the *Federal Register* and in the local media.

#### Subpart D—Sanctuary Designation and Subsequent Operation

##### § 921.30 Designation of National Estuarine Sanctuaries.

(a) The AA shall designate an area as a national estuarine sanctuary pursuant to Section 315 of the Act, based upon written findings that the state has met the following conditions:

(1) A final management plan has been approved by NOAA;

(2) Sanctuary construction and access policies, § 921.21(b)–(d), have been followed;

(3) Key land and water areas of the proposed sanctuary, as identified in the management plan, are under state control; and

(4) An MOU between the state and NOAA ensuring a long-term commitment by the state to the



sanctuary's effective operation and implementation has been signed.

(b) A notice of designation of a national estuarine sanctuary will be placed in the Federal Register and in the local media.

(c) The term "state control" in § 921.30(a)(3) does not necessarily require that the land be owned by the state in fee simple. Less-than-fee interests and regulatory measures may suffice where the state makes a showing that the lands are adequately controlled consistent with the purposes of the sanctuary.

#### **§ 921.31 Supplemental acquisition and development awards.**

After sanctuary designation, and as specified in the approved management plan, the state may request a supplemental acquisition and development award for construction and acquiring any remaining land. Application procedures are specified in Subpart F. Land acquisition must follow the procedures specified in § 921.21(e).

#### **§ 921.32 Operation and management: Implementation of the Management plan.**

(a) After the sanctuary is formally designated, the state may apply for assistance to provide for operation and management. The purpose of this phase in the national estuarine sanctuary process is to implement the approved final management plan and to take the necessary steps to ensure the continued effective operation of the sanctuary after direct Federal support is concluded.

(b) Federal funds of up to \$250,000, to be matched by the state, are available for the operation and management of the national estuarine sanctuary. Operation and management awards are subject to the following limitations:

- (1) No more than \$50,000 in Federal funds per annual award; and
- (2) No more than ten percent of the total amount (state and Federal shares) of each operation and management award may be used for construction-type activities (i.e., \$10,000 maximum per year).

#### **§ 921.33 Boundary changes, amendments to the Management Plan, and addition of multiple-site components.**

(a) Changes in sanctuary boundaries and major changes to the final management plan, including state laws or regulations promulgated specifically for the sanctuary, may be made only after written approval by NOAA. If determined to be necessary, NOAA may require public notice including notice in the Federal Register and an opportunity for comment. Changes in the boundary involving the acquisition of properties

not listed in the management plan or final EIS require public notice and the opportunity for comment; in certain cases, an environmental assessment may be required. Where public notice is required, NOAA will place a notice in the Federal Register of any proposed changes in sanctuary boundaries or proposed major changes to the final management plan and ensure that a notice is published in the local media.

(b) As discussed in § 921.10(b), a state may choose to develop a multiple-site national estuarine sanctuary after the initial acquisition and development award for a single site has been made. Public notice of the proposed addition in the Federal Register and local media, and the opportunity for comment, in addition to the preparation of either an environmental assessment or environment impact statement on the proposal will be required. An environmental impact statement, if required, will be prepared in accordance with section 921.12 and will also include an administrative framework for the multiple-site sanctuary that describes the complementary research and educational programs within the sanctuary. If NOAA determines, based on the scope of the project and the issues associated with the additional site, that an environmental assessment is sufficient to establish a multiple-site sanctuary, then the state shall develop a revised management plan as described in § 921.12(b). The revised management plan will address the sanctuary-wide goals and objectives and the additional component's relationship to the original site.

#### **§ 921.34 Program evaluation.**

(a) Performance during the term of the operation and management award (or under the initial acquisition and development award, if the sanctuary is not designated within two years) will be evaluated annually by the Program Office and periodically in accordance with the provisions of Section 312 of the Act to determine compliance with the conditions of the award and overall progress in implementing the management plan.

(b) To ensure effective sanctuary oversight after the major federal funding expires, the state is required to submit an annual report on the sanctuary. The report should detail program successes and accomplishments in meeting the policies and activities described in the sanctuary management plan. A work plan, detailing the projects to be undertaken the next year to meet the Program goals and the state's role in ongoing sanctuary programs, should also be included. Inadequate annual reports

will trigger a full-scale management audit with a site-visit. On a periodic basis, NOAA will also conduct a full-scale Section 312 evaluation with a site visit and public meeting.

#### **§ 921.35 Withdrawal of designation.**

(a) Upon a finding by the Program Office through its programmatic evaluation (§ 921.34) that a national estuarine sanctuary is not meeting the mandate of Section 315 of the Act, the national Program goals or the policies established in the management plan, NOAA will provide the state with a written notice of the deficiency. Such a notice will explain the deficiencies in the state's approach, propose a solution or solutions to the deficiency and provide a schedule by which the state should remedy the deficiency. The state shall also be advised in writing that it may comment on the Program Office's finding of a deficiency and meet with Program officials to discuss the finding and seek to remedy the deficiency.

(b) If the issues cannot be resolved within a reasonable time, the Program Office will make recommendation regarding withdrawal of designation to the AA. A notice of intent to withdraw designation, with an opportunity for comment, will be placed in the Federal Register.

(c) The state shall be provided the opportunity for an informal hearing before the AA to consider the Program Office's recommendation and finding of deficiency, as well as the state's comments on and response to the recommendation and finding.

(d) Within 30 day after the informal hearing, the AA shall issue a written decision regarding the sanctuary. If a decision is made to withdraw sanctuary designation, the procedures specified in § 921.21(e) regarding the disposition of real property acquired with federal funds shall be followed.

### **Subpart E—Research Funds**

#### **§ 921.40 General.**

(a) To stimulate high quality research within designated national estuarine sanctuaries, NOAA may fund research on a competitive basis to sanctuaries having an approved final management plan. Research funds are intended to support significant research projects that will lead to enhanced scientific understanding of the sanctuary environment, improved coastal decisionmaking, improved sanctuary management, or enhanced public appreciation and understanding of the sanctuary ecosystem. Research opportunities will be identified in final



management plans for national estuarine sanctuaries. Research funds will be used to fill obvious voids in available data, as well as to support creative or innovative projects.

(b) Research funds are provided in addition to any funds available to the state under the operation and management or acquisition and development awards. Research funds must be matched by the state, consistent with § 921.51(e)(iii) ("allowable costs"). Individual states may apply for funding for more than one research project per sanctuary.

**§ 921.41 Categories of potential research project; evaluation criteria.**

(a) While research funds may be used to start-up long-term projects, they are not intended as a source of continuing funding for a particular project over time. Emphasis will be placed on projects that are also of benefit to other sanctuaries in the system. Proposals for research under the following categories will be considered:

(1) Establishing a Data Base and Monitoring Program (e.g., studies related to gathering and interpreting baseline information on the estuary. Funds are available to establish a data base and monitoring system; however, the long-term support for such a system must be carried out as part of overall sanctuary implementation);

(2) Estuarine Ecology (e.g., studies of the relationships between estuarine species and their environment, studies of biological populations community relationships, studies on factors and processes that govern the biological productivity of the estuary);

(3) Estuarine Processes (e.g., studies on dynamic physical processes that influence and give the estuary its particular physical characteristics, including studies related to climate, patterns of watershed drainage and freshwater inflow, patterns of water circulation within the estuary, and studies on oceanic or terrestrial factors that influence the condition of estuarine waters and bottoms);

(4) Applied Research (e.g., studies designed to answer specific management questions); and

(5) Socioeconomic Research (e.g., studies on patterns of land use, sanctuary visitation, archaeological research).

(b) Proposals for research in national estuarine sanctuaries will be evaluated in accordance with criteria listed below:

(1) Scientific merits;

(2) Relevance or importance to sanctuary management or coastal decisionmaking;

(3) Research quality (i.e., soundness of approach, environmental consequences, experience related to methodologies);

(4) Importance to the National Estuarine Sanctuary Program;

(5) Budget and Institutional Capabilities (i.e., reasonableness of budget, sufficiency of logistical support); and

(6) In addition, in the case of long-term monitoring projects, the ability of the state or the research grant recipient to support the grant beyond this initial funding.

**Subpart F—General Financial Assistance Provisions**

**§ 921.50 Application information.**

(a) The maximum total Federal funding per sanctuary is \$3,000,000 for the preacquisition, acquisition and development, and operation and management awards. The research funding under § 921.40 is excluded from this total.

(b) Only a state Governor, or his/her designated state agency, may apply for national estuarine sanctuary financial assistance awards. If a state is participating in the national Coastal Zone Management Program, the recipient of an award under Section 315 of the Act shall consult with the state coastal management agency regarding the application.

(c) No acquisition and development award may be made by NOAA without the approval of the Governor of the state, or his/her designated agency, in which the land to be acquired is located.

(d) All applications are to be submitted to: Management and Budget Group, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, 3300 Whitehaven St., NW., Washington, D.C. 20235.

(e) An original and two copies of the complete application must be submitted at least 120 working days prior to the proposed beginning of the project. The Application for Federal Assistance Standard Form 424 (Non-construction Program) constitutes the formal application for preacquisition, operation and management, and research awards. The Application for Federal Assistance Standard Form 424 (Construction Program) constitutes the formal application for land acquisition and development awards. The application must be accompanied by the information required in Subpart B (preacquisition), Subpart C and Section 921.31 (acquisition and development), and § 921.32 (operation and management), as applicable. All

applications must contain back up data for budget estimates (Federal and non-Federal shares), and evidence that the application complies with the Executive Order 12372, "Intergovernmental Review of Federal Programs." In addition, applications for acquisition and development awards must contain:

(1) State Historic Preservation Office comments;

(2) Appraisals and title information;

(3) Governor's letter approving the sanctuary proposal; and

(4) Written approval from NOAA of the draft or final management plan.

The Standard Form 424 has been approved by the Office of Management and Budget (Approval number 0648-0121) for use through September 30, 1986.

**§ 921.51 Allowable costs.**

(a) Allowable costs will be determined in accordance with OMB Circulars A-102, "Uniform Administrative Requirements for Grants-in-Aid to State and Local Governments", and A-87, "Principles for Determining Costs Applicable to Grants and Contracts with State, Local, and Federally Recognized Indian Tribal Governments"; the financial assistance agreement; these regulations; and other Department of Commerce and NOAA directives. The term "costs" applies to both the Federal and non-Federal shares.

(b) Costs claimed as charges to the award must be reasonable, beneficial and necessary for the proper and efficient administration of the financial assistance award and must be incurred during the awards period, except as provided under preagreement costs, subsection (d).

(c) Costs must not be allocable to or included as a cost of any other Federally-financed program in either the current or a prior award period.

(d) Costs incurred prior to the effective date of the award (preagreement costs) are allowable only when specifically approved in the financial assistance agreement. For non-construction awards, costs incurred more than three months before the award beginning date will not be approved. For construction and land acquisition awards, NOAA will evaluate preagreement costs on a case-by-case basis.

(e) General guidelines for the non-Federal share are contained in OMB Circular A-102, Attachment F. The following may be used by the state in satisfying the matching requirement:

(1) *Preacquisition Awards.* Cash and in-kind contributions (value of goods



and services directly benefiting and specifically identifiable to this part of the project) are allowable. Land may not be used as match.

(2) *Acquisition and Development Awards.* Cash and in-kind contributions are allowable. In general, the fair market value of lands to be included within the sanctuary boundaries and acquired pursuant to the Act, with other than Federal funds, may be used as match. The fair market value of privately donated land, at the time of donation, as establishment by an independent appraiser and certified by a responsible official of the State (pursuant to OMB Circular A-102 Revised, Attachment F) may also be used as match. Appraisals must be performed according to Federal appraisal standards as detailed in NOAA regulations and the "Uniform Appraisal Standards for Federal Land Acquisitions." Costs related to land acquisition, such as appraisals, legal fees and surveys, may also be used as match. Land, including submerged lands, already in the state's possession, in a fully-protected status consistent with the purposes of the National Estuarine Sanctuary Program, may be used as match only if it was acquired within a one-year period prior to the award of preacquisition or acquisition funds and with the intent to establish a national estuarine sanctuary. For state lands not in a fully-protected status (e.g., a state park containing an easement for subsurface mineral rights), the value of the development right or foregone value may be used as match if acquired by or donated to the state for inclusion within the sanctuary.

A state may initially use as match land valued at greater than the Federal share of the acquisition and

development award. The value in excess of the amount required as match for the initial award may be used to match subsequent supplemental acquisition and development awards for the estuarine sanctuary.

(3) *Operations and Management Awards; Research Funds.* Cash and in-kind contributions (directly benefiting and specifically identifiable to this phase of the project), except land, are allowable.

#### § 921.52 Amendments to financial assistance awards.

Actions requiring an amendment to the financial assistance award, such as a request for additional Federal funds, revisions of the approved project budget, or extension of the performance period must be submitted to NOAA on Standard Form 424 (OMB approved number 0748-0121 for use through September 30, 1986) and approved in writing.

#### Appendix 1—Biographic Classification Scheme

##### *Acadian*

1. Northern Gulf of Maine (Eastport to the Sheepscot River).
2. Southern Gulf of Maine (Sheepscot River to Cape Cod).

##### *Virginian*

3. Southern New England (Cape Cod to Sandy Hook).
4. Middle Atlantic (Sandy Hook to Cape Hatteras).
5. Chesapeake Bay.

##### *Carolinian*

6. Northern Carolinas (Cape Hatteras to Santee River).
7. South Atlantic (Santee River to St. John's River).

8. East Florida (St. John's River to Cape Canaveral).

##### *West Indian*

9. Caribbean (Cape Canaveral to Ft. Jefferson and south).
10. West Florida (Ft. Jefferson to Cedar Key).

##### *Louisianian*

11. Panhandle Coast (Cedar Key to Mobile Bay).
12. Mississippi Delta (Mobile Bay to Galveston).
13. Western Gulf (Galveston to Mexican border).

##### *Californian*

14. Southern California (Mexican border to Point Conception).
15. Central California (Point Conception to Cape Mendocino).
16. San Francisco Bay.

##### *Columbian*

17. Middle Pacific (Cape Mendocino to the Columbia River).
18. Washington Coast (Columbia River to Vancouver Island).
19. Puget Sound.

##### *Great Lakes*

20. Western Lakes (Superior, Michigan, Huron).
21. Eastern Lakes (Ontario, Erie).

##### *Fjord*

22. Southern Alaska (Prince of Wales Island to Cook Inlet).
23. Aleutian Islands (Cook Inlet to Bristol Bay).

##### *Sub-Arctic*

24. Northern Alaska (Bristol Bay to Demarcation Point).

##### *Insular*

25. Hawaiian Islands.
26. Western Pacific Island.
27. Eastern Pacific Island.

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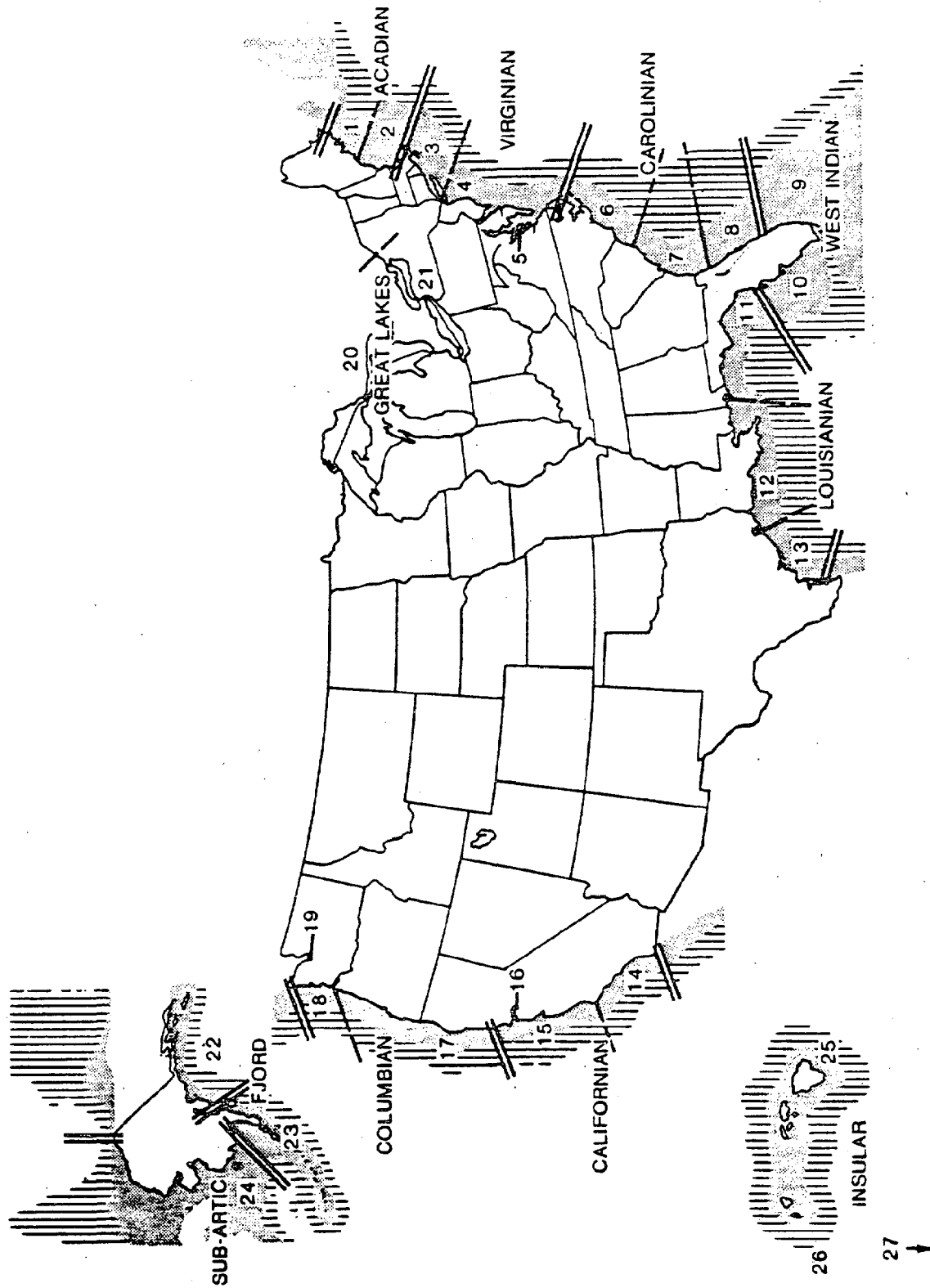


Figure 1. Biogeographic Regions of the United States.

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## Appendix 2—Typology of National Estuarine Areas

This typology system reflects significant differences in estuarine characteristics that are not necessarily related to regional location. The purpose of this type of classification is to maximize ecosystem variety in the selection of national estuarine sanctuaries. Priority will be given to important ecosystem type as yet unrepresented in the sanctuary system. It should be noted that any one site may represent several ecosystem types or physical characteristics.

### Class I—Ecosystem Types

#### Group I—Shorelands

**A. Maritime Forest-Woodland:** This type of ecosystem consists of single-stemmed species that have developed under the influence of salt spray. It can be found on coastal uplands or recent features, such as barrier islands and beaches, and may be divided into the following biomes:

1. **Northern Coniferous Forest Biome:** This is an area of predominantly evergreens such as the sitka spruce (*Picea*), grand fir (*Abies*), and white cedar (*Thuja*), with poor development of the shrub and herb layers, but high annual productivity and pronounced seasonal periodicity.

2. **Moist Temperate (Mesothermal) Coniferous Forest Biome:** Found along the west coast of North America from California to Alaska, this area is dominated by conifers, has a relatively small seasonal range, high humidity with rainfall ranging from 30 to 150 inches, and a well-developed understory of vegetation with an abundance of mosses and other moisture-tolerant plants.

3. **Temperate Deciduous Forest Biome:** This biome is characterized by abundant, evenly distributed rainfall, moderate temperatures which exhibit a distinct seasonal pattern, well-developed soil biota and herb and shrub layers, and numerous plants which produce pulpy fruits and nuts. A distant subdivision of this biome is the *pine edaphic forest* of the southeastern coastal plain, in which only a small portion of the area is occupied by climax vegetation, although it has large areas covered by edaphic climax pines.

4. **Broad-leaved Evergreen Subtropical Forest Biomes:** The main characteristic of this biome is high moisture with less pronounced differences between winter and summer. Examples are the hammocks of Florida and the live oak forests of the Gulf and South Atlantic coasts. Floral dominants include pines, magnolias, bays, hollies, wild tamarind, strangler fig, gumbo limbo, and palms.

**B. Coast Shrublands:** This is a transitional area between the coastal grasslands and woodlands and is characterized by woody species with multiple stems a few centimeters to several meters above the ground developing under the influence of salt spray and occasional sand burial. This includes thickets, scrub, scrub savanna, heathlands, and coastal chaparral. There is a great variety of shrubland vegetation exhibiting regional specificity:

1. **Northern Areas:** Characterized by *Hudsonia*, various erinaceous species, and thickets of *Myrica*, *Prunus*, and *Rosa*.

2. **Southeast Areas:** Floral dominants include *Myrica*, *Baccharis*, and *Ilex*.

3. **Western Areas:** *Adenostoma*, *Arcotiphylos*, and *Eucalyptus* are the dominant floral species.

**C. Coastal Grasslands:** This area, which possesses sand dunes and coastal flats, has low rainfall (10 to 30 inches per year) and large amounts of humus in the soil. Ecological succession is slow, resulting in the presence of a number of seral stages of community development. Dominant vegetation includes mid-grasses (2 to 4 feet tall), such as *Ammophila*, *Agropyron*, and *Calamovilfa*, tall grasses (5 to 8 feet tall), such as *Spartina*, and trees such as the willow (*Salix* sp.), cherry (*Prunus* sp.), and cottonwood (*Populus deltoides*). This area is divided into four regions with the following typical strand vegetation:

1. Arctic/Boreal: *Elymus*;

2. Northeast/West: *Ammophila*;

3. Southeast/Gulf: *Uniola*; and

4. Mid-Atlantic/Gulf: *Spartina patens*.

**D. Coastal Tundra:** This ecosystem, which is found along the Arctic and Boreal coasts of North America, is characterized by low temperatures, a short growing season, and some permafrost, producing a low, treeless mat community made up of mosses, lichens, heath, shrubs, grasses, sedges, rushes, and herbaceous and dwarf woody plants. Common species include arctic/alpine plants such as *Empetrum nigrum* and *Betula nana*, the lichens *Cetraria* and *Cladonia*, and herbaceous plants such as *Potentilla tridentata* and *Rubus chamaemorus*. Common species on the coastal beach ridges of the high arctic desert include *Dryas intergrifolia* and *Saxifraga oppositifolia*.

This area can be divided into two main subdivisions:

1. **Low Tundra:** characterized by a thick, spongy mat of living and undecayed vegetation, often with water and dotted with ponds when not frozen; and

2. **High Tundra:** a bare area except for a scanty growth of lichens and grasses, with underlying ice wedges forming raised polygonal areas.

**E. Coastal Cliffs:** This ecosystem is an important nesting site for many sea and shore birds. It consists of communities of herbaceous, graminoid, or low woody plants (shrubs, heath, etc.) on the top or along rocky faces exposed to salt spray. There is a diversity of plant species including mosses, lichens, liverworts, and "higher" plant representatives.

#### Group II—Transition Areas

**A. Coastal Marshes:** These are wetland areas dominated by grasses (Poaceae), sedges (Cyperaceae), rushes (Juncaceae), cattails (Typhaceae), and other graminoid species and is subject to periodic flooding by either salt or freshwater. This ecosystem may be subdivided into: (a) tidal, which is periodically flooded by either salt or brackish water; (b) non-tidal (freshwater); or (c) tidal freshwater. These are essential habitats for many important estuarine species of fish and invertebrates as well as shorebirds and waterfowl and serves important roles in shore stabilization, flood control, water purification, and nutrient transport and storage.

**B. Coastal Swamps:** These are wet lowland areas that support mosses and shrubs together with large trees such as cypress or gum.

**C. Coastal Mangroves:** This ecosystem experiences regular flooding on either a daily, monthly, or seasonal basis, has low wave action, and is dominated by variety of salt-tolerant trees, such as the red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia nitida*), and the white mangrove (*Laguncularia racemosa*). It is also an important habitat for large populations of fish, invertebrates, and birds. This type of ecosystem can be found from central Florida to extreme south Texas to the islands of the Western Pacific.

**D. Intertidal Beaches:** This ecosystem has a distinct biota of microscopic animals, bacteria, and unicellular algae along with macroscopic crustaceans, mollusks, and worms with a detritus-based nutrient cycle. This area also includes the driftline communities found at high tide levels on the beach. The dominant organisms in this ecosystem include crustaceans such as the mole crab (*Emerita*), amphipods (Gammaridae), ghost crabs (*Ocypode*), and bivalve molluscs such as the coquina (*Donax*) and surf clams (*Spisula* and *Macra*).

**E. Intertidal Mud and Sand Flats:** These areas are composed of unconsolidated, high organic content sediments that function as a short-term storage area for nutrients and organic carbons. Macrophytes are nearly absent in this ecosystem, although it may be heavily colonized by benthic diatoms, dinoflagellates, filamentous blue-green and green algae, and chemosynthetic purple sulfur bacteria. This system may support a considerable population of gastropods, bivalves, and polychaetes, and may serve as a feeding area for a variety of fish and wading birds. In sand, the dominant fauna include the wedge shell *Donax*, the scallop *Pecten*, tellin shells *Tellina*, the heart urchin *Echinocardium*, the lug worm *Arenicola*, sand dollar *Dendraster*, and the sea pansy *Renilla*. In mud, faunal dominants adapted to low oxygen levels include the terebellid *Amphitrite*, the boring clam *Playdon*, the deep sea scallop *Placopecten*, the quahog *Mercenaria*, the echiurid worm *Urechis*, the mud snail *Nassarius*, and the sea cucumber *Thyone*.

**F. Intertidal Algal Beds:** These are hard substrates along the marine edge that are dominated by macroscopic algae, usually thaloid, but also filamentous or unicellular in growth form. This also includes the rocky coast tidepools that fall within the intertidal zone. Dominant fauna of these areas are barnacles, mussels, periwinkles, anemones, and chitons. Three regions are apparent:

1. **Northern Latitude Rocky Shores:** It is in this region that the community structure is best developed. The dominant algal species include *Chondrus* at the low tide level, *Fucus* and *Ascophyllum* at the mid-tidal level, and *Laminaria* and other kelp-like algae just beyond the intertidal, although they can be exposed at extremely low tides or found in very deep tidepools.

2. **Southern Latitudes:** The communities in this region are reduced in comparison to



those of the northern latitudes and possesses algae consisting mostly of single-celled or filamentous green, blue-green, and red algae, and small thaloid brown algae.

3. *Tropical and Subtropical Latitudes*: The intertidal in this region is very reduced and contains numerous calcareous algae such as *Porolithon* and *Lithothamnion*, as well as green algae with calcareous particles such as *Halimeda*, and numerous other green, red, and brown algae.

#### Group III—Submerged Bottoms

A. *Subtidal Hardbottoms*: This system is characterized by a consolidated layer of solid rock or large pieces of rock (neither of biotic origin) and is found in association with geomorphological features such as submarine canyons and fjords and is usually covered with assemblages of sponges, sea fans, bivalves, hard corals, tunicates, and other attached organisms. A significant feature of estuaries in many parts of the world is the oyster reef, a type of subtidal hardbottom. Composed of assemblages of organisms (usually bivalves), it is usually found near an estuary's mouth in a zone of moderate wave action, salt content, and turbidity. If light levels are sufficient, a covering of microscopic and attached macroscopic algae, such as kelp, may also be found.

B. *Subtidal Softbottoms*: Major characteristics of this ecosystem are an unconsolidated layer of fine particles of silt, sand, clay, and gravel, high hydrogen sulfide levels, and anaerobic conditions often existing below the surface. Macrophytes are either sparse or absent, although a layer of benthic microalgae may be present if light levels are sufficient. The faunal community is dominated by a diverse population of deposit feeders including polychaetes, bivalves, and burrowing crustaceans.

C. *Subtidal Plants*: This system is found in relatively shallow water (less than 8 to 10 meters) below mean low tide. It is an area of extremely high primary production that provides food and refuge for a diversity of faunal groups, especially juvenile and adult fish, and in some regions, manatees and sea turtles. Along the North Atlantic and Pacific coasts, the seagrass *Zostera marina* predominates. In the South Atlantic and Gulf coast areas, *Thalassia* and *Diplanthera* predominate. The grasses in both areas support a number of epiphytic organisms.

#### Class II—Physical Characteristics

##### Group I—Geologic

A. *Basin Type*: Coastal water basins occur in a variety of shapes, sizes, depths, and appearances. The eight basic types discussed below will cover most of the cases:

1. *Exposed Coast*: Solid rock formations or heavy sand deposits characterize exposed ocean shore fronts, which are subject to the full force of ocean storms. The sand beaches are very resilient, although the dunes lying just behind the beaches are fragile and easily damaged. The dunes serve as a sand storage area, making them chief stabilizers of the ocean shoreline.

2. *Sheltered Coast*: Sand or coral barriers, built up by natural forces, provide sheltered areas inside a bar or reef where the ecosystem takes on many characteristics of

confined waters—abundant marine grasses, shellfish, and juvenile fish. Water movement is reduced, with the consequent effects of pollution being more severe in this area than in exposed coastal areas.

3. *Bay*: Bays are larger confined bodies of water that are open to the sea and receive strong tidal flow. When stratification is pronounced, the flushing action is augmented by river discharge. Bays vary in size and in type of shoreline.

4. *Embayment*: A confined coastal water body with narrow, restricted inlets and with a significant freshwater inflow can be classified as an embayment. These areas have more restricted inlets than bays, are usually smaller and shallower, have low tidal action, and are subject to sedimentation.

5. *Tidal River*: The lower reach of a coastal river is referred to as a tidal river. The coastal water segment extends from the sea or estuary into which the river discharges to a point as far upstream as there is significant salt content in the water, forming a salt front. A combination of tidal action and freshwater outflow makes tidal rivers well-flushed. The tidal river basin may be a simple channel or a complex of tributaries, small associated embayments, marshfronts, tidal flats, and a variety of others.

6. *Lagoon*: Lagoons are confined coastal bodies of water with restricted inlets to the sea and without significant freshwater inflow. Water circulation is limited, resulting in a poorly flushed, relatively stagnant body of water. Sedimentation is rapid with a great potential for basin shoaling. Shores are often gently sloping and marshy.

7. *Perched Coastal Wetlands*: Unique to Pacific islands, this wetland type, found above sea level in volcanic crater remnants, forms as a result of poor drainage characteristics of the crater rather than from sedimentation. Floral assemblages exhibit distinct zonation while the faunal constituents may include freshwater, brackish, and/or marine species. Example: Aunu'u Island, American Samoa.

8. *Anchialine Systems*: These small coastal exposures of brackish water form in lava depressions or elevated fossil reefs, have only a subsurface connection to the ocean, but show tidal fluctuations. Differing from true estuaries in having no surface continuity with streams or ocean, this system is characterized by a distinct biotic community dominated by benthic algae such as *Rhizoclonium*, the mineral encrusting *Schizothrix*, and the vascular plant *Ruppia maritima*. Characteristic fauna, which exhibit a high degree of endemicity, include the mollusks *Theodoxus neglectus* and *T. cariosus*, the small red shrimp *Metabetaeus lohena* and *Halocaridina rubra*, and the fish *Eleotris sandwicensis* and *Kuhlia sandwicensis*. Although found throughout the world, the high islands of the Pacific are the only areas within the U.S. where this system can be found.

B. *Basin Structure*: Estuary basins may result from the drowning of a river valley (coastal plains estuary), the drowning of a glacial valley (fjord), the occurrence of an offshore barrier (bar-bounded estuary), some tectonic process (tectonic estuary), or volcanic activity (volcanic estuary).

1. *Coastal plains estuary*: Where a drowned valley consists mainly of a single channel, the form of the basin is fairly regular, forming a simple coastal plains estuary. When a channel is flooded with numerous tributaries, an irregular estuary results. Many estuaries of the eastern United States are of this type.

2. *Fjord*: Estuaries that form in elongated, steep headlands that alternate with deep U-shaped valleys resulting from glacial scouring are called fjords. They generally possess rocky floors or very thin veneers of sediment, with deposition generally being restricted to the head where the main river enters. Compared to total fjord volume, river discharge is small. But many fjords have restricted tidal ranges at their mouths, due to sills, or upreaching sections of the bottom which limit free movement of water, often making river flow large with respect to the tidal prism. The deepest portions are in the upstream reaches, where maximum depths can range from 800 m to 1200 m, while sill depths usually range from 40 m to 150 m.

3. *Bar-bounded Estuary*: These result from the development of an offshore barrier, such as a beach strand, a line of barrier islands, reef formations, a line of moraine debris, or the subsiding remnants of a deltaic lobe. The basin is often partially exposed at low tide and is enclosed by a chain of offshore bars or barrier islands, broken at intervals by inlets. These bars may be either deposited offshore or may be coastal dunes that have become isolated by recent sea level rises.

4. *Tectonic Estuary*: These are coastal indentures that have formed through tectonic processes such as slippage along a fault line (San Francisco Bay), folding, or movement of the earth's bedrock, often with a large inflow of freshwater.

5. *Volcanic Estuary*: These coastal bodies of open water, a result of volcanic processes, are depressions or craters that have direct and/or subsurface connections with the ocean and may or may not have surface continuity with streams. These formations are unique to island areas of volcanic origin.

C. *Inlet Type*: Inlets in various forms are an integral part of the estuarine environment, as they regulate, to a certain extent, the velocity and magnitude of tidal exchange, the degree of mixing, and volume of discharge to the sea. There are four major types of inlets:

1. *Unrestricted*: An estuary with a wide, unrestricted inlet typically has slow currents, no significant turbulence, and receive the full effect of ocean waves and local disturbances which serve to modify the shoreline. These estuaries are partially mixed, as the open mouth permits the incursion of marine waters to considerable distances upstream, depending on the tidal amplitude and stream gradient.

2. *Restricted*: Restrictions of estuaries can exist in many forms: bars, barrier islands, spits, sills, and more. Restricted inlets result in decreased circulation, more pronounced longitudinal and vertical salinity gradients, and more rapid sedimentation. However, if the estuary mouth is restricted by depositional features or land closures, the incoming tide may be held back until it suddenly breaks forth into the basin as a



tidal wave, or *bore*. Such currents exert profound effects on the nature of the substrate, turbidity, and biota of the estuary.

3. *Permanent*: Permanent inlets are usually opposite the mouths of major rivers and permit river water to flow into the sea. Sedimentation and deposition are minimal.

4. *Temporary (Intermittent)*: Temporary inlets are formed by storms and frequently shift position, depending on tidal flow, the depth of the sea and sound waters, the frequency of storms, and the amount of littoral transport.

D. *Bottom Composition*: The bottom composition of estuaries attests to the vigorous, rapid, and complex sedimentation processes characteristic of most coastal regions with low relief. Sediments are derived through the hydrologic processes of erosion, transport, and deposition carried on by the sea and the stream.

1. *Sand*: Near estuary mouths, where the predominating forces of the sea build spits or other depositional features, the shores and substrates of the estuary are sandy. The bottom sediments in this area are usually coarse, with a graduation toward finer particles in the head of the estuary. In the head region and other zones of reduced flow, fine silty sands are deposited. Sand deposition occurs only in wider or deeper regions where velocity is reduced.

2. *Mud*: At the base level of a stream near its mouth, the bottom is typically composed of loose muds, silt, and organic detritus as a result of erosion and transport from the upper stream reaches and organic decomposition. Just inside the estuary entrance, the bottom contains considerable quantities of sand and mud, which support a rich fauna. Mud flats, commonly built up in estuarine basins, are composed of loose, coarse, and fine mud and sand, often dividing the original channel.

3. *Rock*: Rocks usually occur in areas where the stream runs rapidly over a steep gradient with its coarse materials being derived from the higher elevations where the stream slope is greater. The larger fragments are usually found in shallow areas near the stream mouth.

4. *Oyster shell*: Throughout a major portion of the world, the oyster reef is one of the most significant features of estuaries, usually being found near the mouth of the estuary in a zone of moderate wave action, salt content, and turbidity. It is often a major factor in modifying estuarine current systems and sedimentation, and may occur as an elongated island or peninsula oriented across the main current, or may develop parallel to the direction of the current.

#### Group II—Hydrographic

A. *Circulation*: Circulation patterns are the result of the combined influences of freshwater flow, tidal action, wind and oceanic forces, and serve many functions: nutrient transport, plankton dispersal, ecosystem flushing, salinity control, water mixing, and more.

1. *Stratified*: This is typical of estuaries with a strong freshwater influx and is commonly found in bays formed from "drowned" river valleys, fjords, and other deep basins. There is a net movement of freshwater outward at the top layer and saltwater at the bottom layer, resulting in a net outward transport of surface organisms and net inward transport of bottom organisms.

2. *Non-stratified*: Estuaries of this type are found where water movement is sluggish and flushing rate is low, although there may be sufficient circulation to provide the basis for a high carrying capacity. This is common to shallow embayments and bays lacking a good supply of freshwater from land drainage.

3. *Lagoonal*: An estuary of this type is characterized by low rates of water movement resulting from a lack of significant freshwater influx and a lack of strong tidal exchange because of the typically narrow inlet connecting the lagoon to the sea. Circulation, whose major driving force is wind, is the major limiting factor in biological productivity within lagoons.

B. *Tides*: This is the most important ecological factor in an estuary, as it affects water exchange and its vertical range determines the extent of tidal flats which may be exposed and submerged with each tidal cycle. Tidal action against the volume of river water discharged into an estuary results in a complex system whose properties vary according to estuary structure as well as the magnitude of river flow and tidal range. Tides are usually described in terms of their cycle and their relative heights. In the United States, tide height is reckoned on the basis of average low tide, which is referred to as *datum*. The tides, although complex, falls into three main categories:

1. *Diurnal*: This refers to a daily change in water level that can be observed along the shoreline. There is one high tide and one low tide per day.

2. *Semidiurnal*: This refers to a twice daily rise and fall in water that can be observed along the shoreline.

3. *Wind/Storm Tides*: This refers to fluctuations in water elevation to wind and storm events, where influence of lunar tides is less.

C. *Freshwater*: According to nearly all the definitions advanced, it is inherent that all estuaries need freshwater, which is drained from the land and measurably dilutes seawater to create a brackish condition. Freshwater enters an estuary as runoff from the land either from a surface and/or subsurface source.

1. *Surface water*: This is water flowing over the ground in the form of streams. Local variation in runoff is dependent upon the nature of the soil (porosity and solubility), degree of surface slope, vegetational type and development, local climatic conditions, and volume and intensity of precipitation.

2. *Subsurface water*: This refers to the precipitation that has been absorbed by the soil and stored below the surface. The distribution of subsurface water depends on local climate, topography, and the porosity and permeability of the underlying soils and rocks. There are two main subtypes of surface water:

a. *Vadose water*: This is water in the soil above the water table. Its volume with respect to the soil, is subject to considerable fluctuation.

b. *Groundwater*: This is water contained in the rocks below the water table, is usually of more uniform volume than vadose water, and generally follows the topographic relief of the land, being high below hills and sloping into valleys.

#### Group III—Chemical

A. *Salinity*: This reflects a complex mixture of salts, the most abundant being sodium chloride, and is a very critical factor in the distribution and maintenance of many estuarine organisms. Based on salinity, there are two basic estuarine types and eight different salinity zones (expressed in parts per thousand—ppt).

1. *Positive estuary*: This is an estuary in which the freshwater influx is sufficient to maintain mixing, resulting in a pattern of increasing salinity toward the estuary mouth. It is characterized by low oxygen concentration in the deeper waters and considerable organic content in bottom sediments.

2. *Negative estuary*: This is found in particularly arid regions, where estuary evaporation may exceed freshwater inflow, resulting in increased salinity in the upper part of the basin, especially if the estuary mouth is restricted so that tidal flow is inhibited. These are typically very salty (hyperhaline), moderately oxygenated at depth, and possess bottom sediments that are poor in organic content.

3. *Salinity zones (expressed in ppt)*:

a. *Hyperhaline*—greater than 40 ppt.

b. *Euhaline*—40 ppt to 30 ppt.

c. *Mixohaline*: 30 ppt to 0.5 ppt.

(1) *Mixoeuhaline*—greater than 30 ppt but less than the adjacent euhaline sea.

(2) *Polyhaline*—30 ppt to 18 ppt.

(3) *Mesohaline*—18 ppt to 5 ppt.

(4) *Oligohaline*—5 ppt to 0.5 ppt.

d. *Limnetic*: Less than 0.5 ppt.

B. *pH Regime*: This is indicative of the mineral richness of estuarine waters and fall into three main categories:

1. *Acid*: Waters with a pH of less than 5.5.

2. *Circumneutral*: A condition where the pH ranges from 5.5 to 7.4.

3. *Alkaline*: Waters with a pH greater than 7.4.

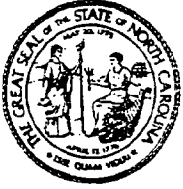
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GILLING CODE 3010-02-03



APPENDIX 3

Research and Educational Forms  
for the Proposed Component





# North Carolina Department of Natural Resources & Community Development

James B. Hunt, Jr., Governor

James A. Summers, Secretary

OFFICE OF  
COASTAL MANAGEMENT

David W. Owens  
Director

Telephone 919 733-2293

## North Carolina National Estuarine Sanctuary Program

### Research Proposal

Date \_\_\_\_\_

Name of Principal Investigator \_\_\_\_\_

Agency Affiliation \_\_\_\_\_

Telephone No. \_\_\_\_\_

Address \_\_\_\_\_

Are you requesting consideration for Federal funding?

☐ Yes ☐ No

If yes, see Application Considerations, pg. 5 of this form.

Will any equipment be left on site for the duration of the investigation?

☐ Yes ☐ No Please explain:

Has an on-site visit been conducted? ☐ Yes ☐ No

Will the investigation require the removal of plants or animals?

☐ Yes ☐ No

Have all the necessary collection permits been obtained?

☐ Yes ☐ No (See notice below)

### DURATION OF THE STUDY:

Starting Date \_\_\_\_\_

Completion Date \_\_\_\_\_

275



Using the attached map, please indicate (x) the areas within the sanctuary to be used for the investigation. Give dimensions of study plot in a sketch if necessary.

NOTICE: COLLECTION PERMITS ARE REQUIRED

Waterfowl	U. S. Fish and Wildlife Service 919/755-4786 (Raleigh)
Fish and Shellfish	N. C. Division of Marine Fisheries 919/726-7021 (Morehead City)
Terrestrial Animals	N. C. Wildlife Resources Commission 919/733-7896 (Raleigh)
Plants	N. C. Office of Coastal Management working with the N. C. Natural Heritage Program 919/733-2293 (Raleigh)

\_\_\_\_\_  
PRINCIPAL INVESTIGATOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SANCTUARY COORDINATOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
APPROVED

\_\_\_\_\_  
DENIED

\_\_\_\_\_  
APPROVED WITH SPECIAL CONDITIONS (Attached)

Proposal should be written according to the following Guidelines and attached to this form. Proposals should be submitted in 5 duplicate copies to:

John Taggart, Sanctuary Coordinator  
North Carolina National Estuarine Sanctuary System  
DNRCD - Coastal Management  
P. O. Box 27687  
Raleigh, NC 27611



## GUIDELINES FOR PREPARING RESEARCH PROPOSALS

### Executive Summary

Attach on separate sheet.

### Project Description

The main body of the proposal should be concise, but detailed. It should include:

1. Description of Current State of Knowledge. Discuss the problem in light of significant previous work in the area.
2. Project Objectives. State the objectives of the study.
3. Project Significance. Discuss how the proposed effort will enhance or contribute to improving the state of knowledge. Discuss any relevant management issues and how the proposed effort will contribute to sanctuary management decision-making, future sanctuary research, and/or other works in progress.
4. Methods. Describe the tasks required to accomplish the project's objectives. Provide adequate description of field and laboratory methods and procedures. Provide a map to study location(s). Indicate habitat areas of particular concern. Indicate where laboratory analyses will be conducted, if applicable. Describe the rationale for selecting the proposed methods and study locations over any alternatives. Identify any environmental consequences of proposed approach. List and describe facilities and equipment to be used. Document collaborative arrangements and cost-sharing.
5. Analysis of Results. Discuss how the results will be analyzed. Reference relevant statistical analyses.
6. Deliverables. Discuss anticipated final products. Indicate how results will be treated -- published in reference journal, published in the public press, incorporated into academic curriculum, submitted for publication in SPD's Technical Report Series, etc. (Note: the SPD prints and publishes a limited number of outstanding reports in NOAA's Technical Report Series.)

### Personnel

Describe the research team and the specific task assignments of team members. Indicate the percentage of time, based on the offeror's regular work week, that personnel are expected to devote to the proposed work. Provide resumes listing qualifications and details relating to professional and technical personnel. In an appendix, list each investigator's publications during the past 5 years. Describe and explain any portion of work expected to be subcontracted and identify probable sources.



Submit evidence of ability to perform. Such evidence shall be in reference to similar efforts performed.

### References

Cite only those used in the text of the proposal.

### Budget

The applicant may request funds under any of the categories listed below as long as the item is considered necessary to perform the research. The applicant should provide justification of major items requested.

1. Salaries and Wages. Salaries and wages of the principal investigator and other members of the project team constitute direct costs in proportion to the effort devoted to the project. The number of full-time person months or days and the rate of pay (hourly, monthly or annual) should be indicated. Salaries requested must be consistent with the institution's regular practices. The submitted organization may request that salary data remain proprietary information.

2. Fringe Benefits. Fringe benefits (i.e. social security, insurance, retirement) may be treated as direct costs so long as this is consistent with the institution's regular practices.

3. Equipment. Itemize equipment to be purchased, leased or rented by model number and manufacture, where known. Describe purpose of use. SPD defines equipment as an item of property that has an acquisition cost of \$300 or more and an expected service life of 2 years or more. Equipment becomes the property of SPD at the termination of the contract. Where possible and economically advantageous, equipment should be rented or leased for the duration of the project.

4. Travel. Describe the type and extent of travel and relation to the proposed research. Travel expense should not exceed 40 percent of total direct costs. Funds may be requested for field work and subsistence and for consultant's travel.

5. Other Direct Costs. The budget should itemize other anticipated costs under the following categories:

- a. Materials and Supplies. The budget should indicate in general terms the types of expendable materials and supplies required with their estimated costs.
- b. Research Vessel or Aircraft Rental. Include unit cost and duration of use.
- c. Laboratory Space Rental. Funds may be requested for use of laboratory space at research establishments away from the grantee institution while conducting studies specifically related to the proposed effort.



- d. Reference Books and Periodicals. Funds may be requested for reference books and periodicals only if they are specifically required for the research project.
- e. Publication and Reproduction Costs. This includes costs of preparing written text and illustrations and publishing results.
- f. Consultant Services. Consultant services should be justified and information furnished on consultant's expertise, primary organizational affiliation, daily compensation rate and number of days of expected service. (Travel should be listed under travel in the budget).
- g. Computer Services. The cost of computer services, including data analyses and storage, word processing for report preparation and computer-based retrieval of scientific and technical information, may be requested and must be justified.
- h. Subcontracts. Subcontracts must be disclosed in the proposal for approval by SPD.

6. Indirect Costs. Appropriate or established indirect cost rate; e.g., fees.

#### Other Sources of Financial Support

List all current or pending research to which the principal investigator or other key personnel have committed their time during the period of the proposed work, regardless of the source of support. Indicate the level of effort or percentage of time devoted to these projects.

If the proposal submitted to SPD is being submitted to other possible sponsors, list them and describe the extent of support sought. Disclosure of this information will not jeopardize chances for SPD funding.

#### APPLICATION CONSIDERATIONS FOR FEDERAL FUNDING

To stimulate high quality research within designated national estuarine sanctuaries, the National Oceanic and Atmospheric Administration (NOAA), Office of Ocean and Coastal Resource Management (OCRM), Sanctuary Programs Division (SPD), provide limited financial support, on a competitive basis, for research in sanctuaries having an approved final management plan. Research funds are intended to support significant research projects that will lead to enhanced scientific understanding of the sanctuary environment, improved coastal decision-making, improved sanctuary management, or enhanced public appreciation and understanding of the sanctuary ecosystem. Emphasis will be placed on projects that are also of benefit to other sanctuaries in the system. Research needs are outlined in sanctuary management plans.



Proposals for research under the following categories will be considered:

1. Baseline Data and Establishment of a Monitoring Program (e.g., studies related to gathering and interpreting baseline information on the estuary; funds are available to establish a monitoring system. The long-term support for a monitoring system must be carried out as part of overall sanctuary implementation);

2. Estuarine Ecology (e.g., studies of individual species' relationships with their estuarine environment, studies of biological community relationships, studies on factors and processes that govern the biological productivity of the estuary);

3. Estuarine Processes (e.g., studies on dynamic physical processes that influence and give the estuary its particular physical characteristics, including studies related to climate, patterns of watershed drainage and freshwater drainage and freshwater inflow patterns of water circulation within the estuary, and studies on oceanic or terrestrial factors that influence the condition of estuarine waters and bottoms);

4. Applied Research (e.g., studies designed to answer specific management questions); and

5. Socioeconomic Research (e.g., studies on patterns of land use, sanctuary visitation, archaeological research).

Research opportunities are identified in final management plans for national estuarine sanctuaries. Research funds will be used to fill obvious voids in available data, as well as to support creative or innovative projects.

Proposals for research in national estuarine sanctuaries will be screened for completeness and evaluated in accordance with criteria listed below:

- o Scientific merits;
- o Relevance or importance to sanctuary management or coastal decision-making;
- o Research quality (i.e., soundness of approach, environmental consequences; experience related to methodologies); and
- o Importance to the National Estuarine Sanctuary Program.



LOG SHEET

Please complete this form after using one of the components listed below for educational or interpretive programs. File the completed originals with the Sanctuary Manager, Office of Coastal Management, NRCO, P. O. Box 27687, Raleigh, NC 27611 on a seasonal basis. Keep a photo copy for your files.

QUESTIONS: Call the Sanctuary Manager, 919/733-2293

Check One:                      ☐ RACHEL CARSON SITE                      ☐ ZEKE'S ISLAND SITE

NAME OF PROGRAM: \_\_\_\_\_

MAXIMUM NUMBER OF PARTICIPANTS: \_\_\_\_\_

AGE LEVEL OF PARTICIPANTS: \_\_\_\_\_

DATE OF PROGRAM: \_\_\_\_\_

TIME OF PROGRAM: \_\_\_\_\_

YOUR NAME, TITLE: \_\_\_\_\_

AFFILIATION: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE NO.: \_\_\_\_\_

ACCESS TO SITE ACHIEVED BY: \_\_\_\_\_

PLEASE GIVE BRIEF EXPLANATION OF PROGRAM:



APPENDIX 4

Site Selection Process



Appendix 4: Selection of Masonboro Island as a proposed component to the North Carolina National Estuarine Sanctuary System

The results of the 1980 estuarine sanctuary nomination process are summarized below and the numbered sites are indicated on the attached map. All of the letters from respondents to the nomination form (Attachment D) are included; some of the nominations (e.g. by OCM staff) were made by personnel communication.

The twenty-eight sites nominated as potential estuarine sanctuaries in North Carolina encompass the best examples of the state's unusually diverse estuarine habitats. The estuaries delineated by the approximately 4,000 miles of North Carolina estuarine shoreline (Dr. B.J. Copeland, personal communication of 21 February 1984. UNC Sea Grant) are naturally subdivided by: portions of two major biogeographic regions--Virginian and Carolinian, salinities ranging from oligohaline to euhaline, various estuarine basin types and structures associated with both barrier island and mainland areas, and water level fluctuations determined by either semi-diurnal lunar tides or irregular wind-influenced tides. For these reasons it was essential that a multiple site system be developed to adequately represent the state's estuarine complexity.

Because most of the sites nominated are viable candidates for sanctuary status from a physical/biological standpoint, OCM sought to incorporate various practical considerations in the selection process. Such additional site selection criteria include: 1.) development pressure, 2.) estuarine research/educational interest, 3.) availability of lands that would constitute a natural, yet manageable estuarine unit, 4.) local interest in estuarine preservation, 5.) accessibility, 6.) lack of on-site disturbance, and 7.) compatibility of adjacent land uses.

After careful analysis OCM staff determined that the estuaries associated with the state's barrier islands deserved initial priority consideration because of the greater development pressure on the islands than the mainland. Several such estuarine areas that were available for acquisition were also known to be highly desirable sites for research by local universities or colleges. Similarly, public sentiment favored preservation of these sites for education and traditional hunting and fishing. By combining all of these factors with the physical/biological variations of the state's estuaries, OCM selected four sites--Zeke's Island, Carrot Island-Bird Shoal (now called Rachel Carson), Currituck Banks, and Masonboro Island. Each of these selections represents a distinctly different estuarine typology or biogeographic region (see Table 1) according to the revised regulations.

The first three sites recommended by OCM have been accepted by OCRM as components of the North Carolina National Estuarine Sanctuary System. Masonboro Island would complete barrier island estuary representation in the North Carolina system because the island encompasses an excellent example of a polyhaline to euhaline, embayment basin type with bar-bound structure in the Carolinian Region. The Masonboro Island/estuary complex is undisturbed, used for research and education by local institutions, and has a high degree of local support for preservation.



Masonboro Island is definitely the best choice relative to similar estuarine sites that were nominated (see attached site evaluations of numbers 21, 22, 23, 24, 27 and 28.) The pristine and extensive non-drowned river mouth estuary associated with Masonboro Island is only five miles from the University of North Carolina at Wilmington, a school with a strong marine science faculty that already utilizes the site for research and education. Support for preservation of the island has also been expressed by landowners, the New Hanover County Commissioners, the town councils of adjacent Wrightsville Beach and Carolina Beach, and numerous private citizens. For these reasons, OCM proposes that Masonboro Island be the next component included in the North Carolina National Estuarine Sanctuary System.

The multiple site perspective of the system also needs representation by outstanding examples of estuaries associated with the mainland. As stated above, OCM gave selective priority to estuaries within barrier island areas; however, we look forward to soliciting and assessing another round of nominations to cover estuaries along the mainland after the establishment of Masonboro Island as a component. Many prime examples of such estuaries (e.g. Alligator River, Cedar Island, Northwest River, Goose Creek, Mouth of the Roanoke River, etc.) are described in the attached site evaluations.

#### Nomination Summary

<u>Site</u>	<u>Nominator(s)</u>
(1) Bennetts Creek - Chowan River (Gates Co.)	A. B. Coleman
(2) Areneuse Creek - Pasquotank River (Pasquotank Co.)	A. B. Coleman
(3) Bluff Point (Chowan Co.)	Vincent Bellis
(4) Sandy Point (Chowan Co.)	Vincent Bellis
(5) Black Walnut Creek (Chowan Co.)	Vincent Bellis
(6) Northwest River (Currituck Co.)	A. B. Coleman
(7) Currituck Sound (Currituck Co.)	Charles Roe, Steve Benton (OCM)
(8) Mouth of the Roanoke River (Bertie Co.)	Vincent Bellis
(9) Durant's Island (Dare Co.)	Charles Roe, Vincent Bellis, Steve Benton (OCM)



(10) Alligator River (Dare-Tyrrell Cos.)	Tom Hatley, Preston Pate (OCM)
(11) Dare-Hyde Marshes (Dare-Hyde Cos.)	Charles Roe
(12) Otis Spit/Otis Bay (Dare Co.)	Vincent Bellis
(13) Broad Creek (Dare Co.)	Vincent Bellis, Steve Benton (OCM)
(14) Causeway Marshes (Dare Co.)	Vincent Bellis
(15) Marshes of Nags Head Woods (Dare Co.)	Vincent Bellis
(16) Swanquarter National Wildlife Refuge (Hyde Co.)	Steve Frick, Steve Benton (OCM)
(17) Goose Creek State Park/Ragged Point (Beaufort Co.)	Vincent Bellis
(18) Cedar Island National Wildlife Refuge (Carteret Co.)	Steve Frick, Vincent Bellis
(19) Newport River (Carteret Co.)	Tom Hatley, E. T. Heinen
(20) Carrot Island-Bird Shoal (Carteret Co.)	Charles Roe, Preston Pate (OCM)
(21) Bogue Sound (Carteret Co.)	E. T. Heinen
(22) Brown's Island (Onslow Co.)	Joanne Powell
(23) Sanddollar Island (Pender Co.)	Charles Hollis
(24) Banks Channel (New Hanover Co.)	Anne McGrary
(25) Masonboro Island (New Hanover Co.)	Charles Hollis, Gilbert Bane
(26) Smith Island Complex (New Hanover-Brunswick Cos.)	Robert Moul (OCM), Robert Stroud (OCM)



(27) Oak Island Marshes  
(Brunswick Co.)

Robert Moul (OCM),  
Preston Pate (OCM)

(28) Bird Island, Mad Inlet  
(Brunswick Co.)

Robert Moul (OCM)

#### Site Evaluations

##### Site

##### Discussion

- |   |   |
|---|---|
| 1. Bennetts Creek<br>(E-CPE/Vir) <sup>1</sup>             | This site primarily consists of a blackwater stream lined with swamp forest. Freshwater marsh communities are present where the stream empties into the Chowan River. |
| 2. Areneuse Creek<br>(E-CPE/Vir)                          | Areneuse Creek exhibits natural features very similar to those of Bennetts Creek except that this stream flows into the Pasquotank River.                             |
| 3. Bluff Point<br>(E-CPE/Vir)                             | This site consists of a swamp forest associated with Albemarle Sound.   |
| 4. Sandy Point<br>(E-CPE/Vir)                             | similar to 3  |
| 5. Black Walnut Point<br>(E-CPE/Vir)                      | similar to 3  |
| 6. Northwest River<br>(E-CPE/Vir) <sup>2</sup>            | A freshwater to oligohaline river that flows into Currituck Sound.  |
| 7. Currituck Sound<br>(E-CPE/Vir)                         | The Currituck Banks component is a portion of this area.  |
| 8. Mouth of the Roanoke River<br>(E-CPE/Vir) <sup>2</sup> | This estuary is characterized by silt-laden piedmont brownwaters mixed with organically-stained blackwaters drained from coastal lowlands.                            |

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<sup>1</sup>Typologic/Biogeographic Classification:

E = Embayment	-CPE = Coastal Plains Estuary
TR = Tidal River	-BBE = Bar Bound Estuary
L = Lagoon	/Vir = Virginian Region
	/Car = Carolinian Region

<sup>2</sup>Although this is a river system, lunar tidal influence is almost non-existent in sound waters north and west of Manteo. Water level fluctuations in these estuaries are primarily determined by prevailing winds. For this reason, the embayment category is used instead of tidal river.



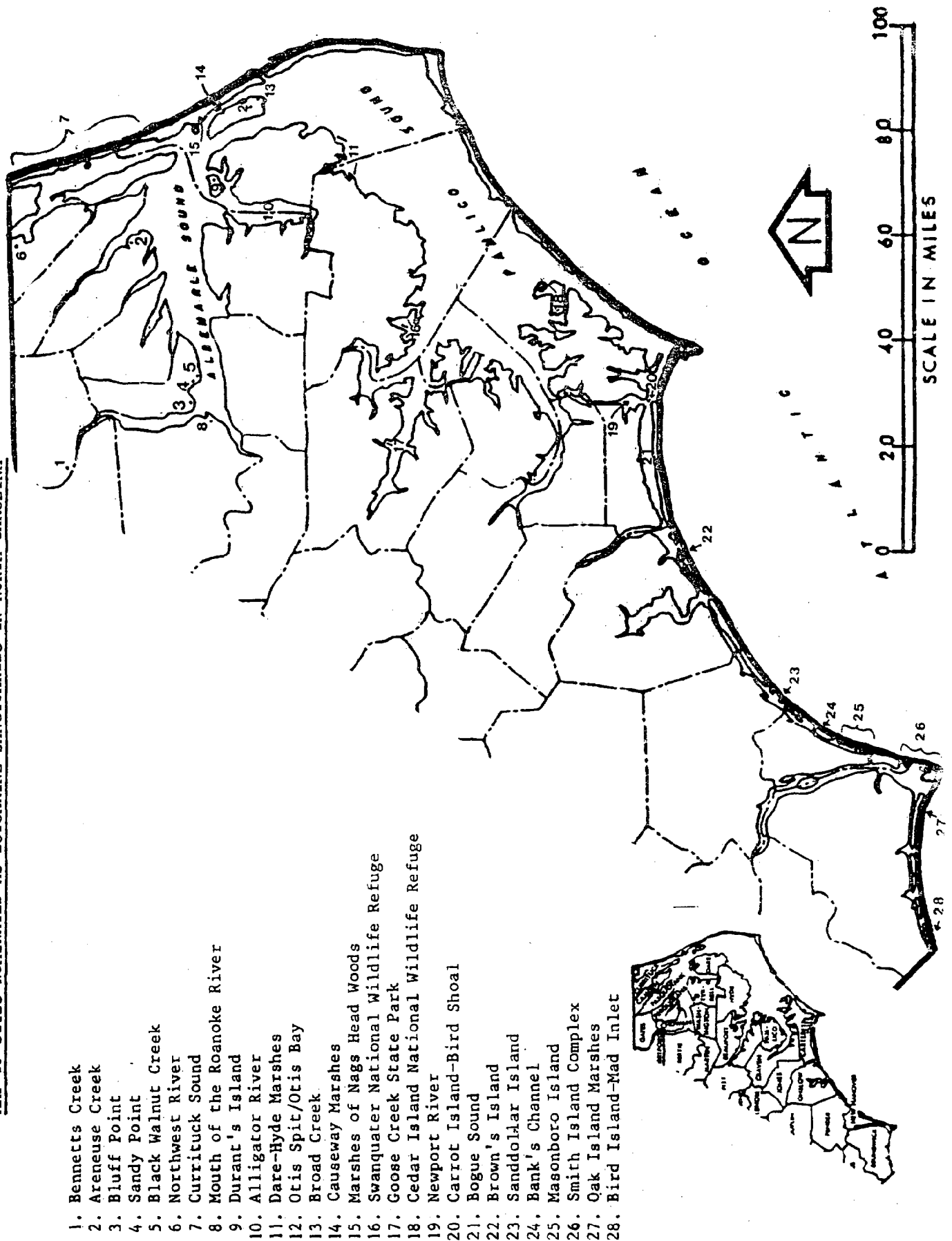
9. Durant's Island  
(E-CPE-Vir)  
A large island covered with swamp forest and brackish marsh, Durant's Island is situated where the Alligator River flows into Albemarle Sound.
10. Alligator River  
(E-CPE/Vir)<sup>2</sup>  
A very large oligohaline river system primarily draining surrounding pocosin, swamp forest, and marsh areas with limited input from the Pungo River via the AIWW.
11. Dare-Hyde Marshes  
(E-CPE/Vir)  
These brackish marshes (black needlerush and giant cordgrass) border Pamlico Sound along the southeastern shore of Dare County and northeastern shore of Hyde County.
12. Otis Spit/Otis Bay  
(E-BBE/Vir)  
All of these sites represent portions of low salinity embayments with bar-bound estuarine structure like Currituck Banks. Most of the areas are covered by black needlerush marshes while associated submerged communities are quite similar to those found at the Currituck Banks component.
13. Broad Creek  
(E-BBE/Vir)
14. Causeway Marshes  
(E-BBE/Vir)
15. Marshes of Nags Head Woods  
(E-BBE/Vir)
16. Swanquarter National Wildlife Refuge  
(E-CPE/Vir)  
A large brackish marsh-low salinity estuarine system owned and managed by the U.S. Fish and Wildlife Service.
17. Goose Creek State Park/Ragged Point  
(E-CPE/Vir)  
A diverse brackish marsh system located along the northern shoreline of the Pamlico River.
18. Cedar Island National Wildlife Refuge  
(E-CPE/Car)  
Extensive brackish (black needlerush) marsh-dominated wildlife refuge along Core and Pamlico Sounds.
19. Newport River  
(TR-CPE/Car)  
A tidal river estuary terminating in the Morehead City-Beaufort area. The Rachel Carson component encompasses a portion of this estuary.
20. Carrot Island-Bird Shoal  
(TR-CPE/Car)  
These islands are included in the Rachel Carson component.



21. Bogue Sound  
(E-BBE/Car)  
  
This large sound area is bounded by Bogue Banks, a developed barrier island. Masonboro Island is an undeveloped barrier island with an embayment basin type that covers a higher proportion of estuary to land than found on Bogue Banks.
22. Brown's Island  
(E-BBE/Car)  
  
This undeveloped barrier island is used as a bombing range by the U.S. Marine Corps, Camp LeJeune. The site has less estuarine area than Masonboro Island.
23. Sanddollar Island  
(E-BBE/Car)  
  
Sanddollar Island is an undeveloped barrier island with far less estuarine area than Masonboro Island. The site has no eel grass beds as those found in the Masonboro estuary.
24. Banks Channel  
(E-BBE/Car)  
  
This site is very similar to Masonboro estuary in terms of chemical, physical, and biologic attributes. However, there is extensive development (Town of Wrightsville Beach) on the barrier island associated with Banks Channel.
25. Masonboro Island  
(E-BBE/Car)  
  
proposed component
26. Smith Island Complex  
(L & TR-BBE&CPE/Car)  
  
The Zeke's Island component represents the northern portion of this extensive barrier island-tidal river estuarine complex.
27. Oak Island Marshes  
(E-BBE/Car)  
  
Oak Island includes a salt marsh complex on the sound side of a barrier island characterized by intensive localized development. The marshes and estuary of Masonboro Island are more extensive and have better water quality.
28. Bird Island/Mad Inlet  
(E-BBE/Car)  
  
A small undeveloped barrier island with less estuarine area and lower habitat diversity (e.g. no eel grass beds than Masonboro Island).



MAP OF SITES NOMINATED AS ESTUARINE SANCTUARIES IN NORTH CAROLINA





APPENDIX 5

Salinity and Flow Patterns in the  
Masonboro Island Area



HYDROGRAPHIC ATLAS OF NORTH CAROLINA

ESTUARINE AND SOUND WATERS, 1972

by

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Institute of Marine Sciences  
University of North Carolina

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JUNE, 1973

Sea Grant Program, School of Public Health, University of North Carolina  
Chapel Hill, North Carolina 27514



<u>Station</u>	<u>Latitude</u>	<u>Longitude</u>
48. Barden Inlet	34° 37' N	76° 33' W
49. Beaufort Inlet	34° 40' N	76° 40' W
50-61. Newport River 12 stations	34° 45' N	76° 42' W
62. Newport River Station 15	34° 45' N	76° 46' W
63. Bogue Inlet-Emerald Isle Bridge	34° 41' N	77° 03' W
64. White Oak River East	34° 40' N	77° 05' W
65. White Oak River Bridge	34° 41' N	77° 07' W
65a. White Oak River	34° 43' N	77° 07' W
66. Queens Creek	34° 40' N	77° 09' W
67. Saunders Creek #55	34° 38' N	77° 11' W
68. New River Inlet #74	34° 33' N	77° 22' W
68a. New River Inlet Dredge Station	34° 30' N	77° 25' W
69. Old Topsail Sound #86	34° 20' N	77° 41' W
69a. Old Topsail Sound Dredge Station	34° 21' N	77° 39' W
69b. Old Topsail Sound Dredge Station	34° 22' N	77° 37' W
70. Howard Channel-New Topsail Inlet	34° 18' N	77° 44' W
70a. Howard Channel-New Topsail Inlet Dredge Station	34° 19' N	77° 44' W
71. Green Channel	34° 16' N	77° 44' W
72. Pages Creek	34° 19' N	77° 43' W
73. Mason Inlet-Howe Point	34° 15' N	77° 45' W
74. <u>Masonboro Inlet</u>	<u>34° 11' N</u>	<u>77° 49' W</u>
75. <u>Carolina Beach</u>	<u>34° 05' N</u>	<u>77° 53' W</u>
76. Cape Fear #174	34° 01' N	77° 57' W
77. Cape Fear #18	33° 56' N	77° 59' W
78. Elizabeth River #11	33° 55' N	78° 05' W
79. Lockwoods Folly	33° 55' N	78° 15' W
79a. Lockwoods Folly East Dredge Station	33° 55' N	78° 13' W



Table 74. Masonboro Inlet.

(Temperatures are °C and salinities are p.p.t.)

Temperature					Salinity			
No.	Max.	Min.	No.	$\bar{x}$	Max.	Min.	No.	$\bar{x}$
Surface								
J			ND	ND			ND	ND
F			1	9.0			1	33.0
M			1	14.0			1	36.0
A			1	18.0			1	35.0
M			1	21.0			1	35.2
J			1	24.3			1	33.4
J			1	25.0			1	35.0
A			1	29.5			1	36.2
S			1	25.5			1	36.7
O			1	20.5			1	35.1
N			1	18.6			1	35.0
D			1	14.5			1	21.9
Bottom								
J			ND	ND			ND	ND
F			1	9.0			1	33.0
M			1	14.0			1	35.0
A			1	17.5			1	36.0
M			1	20.5			1	34.7
J			1	24.0			1	32.8
J			1	25.0			1	35.0
A			1	28.0			1	36.7
S			ND	ND			ND	ND
O			1	20.0			1	34.5
N			1	19.0			1	35.0
D			ND	ND			ND	ND



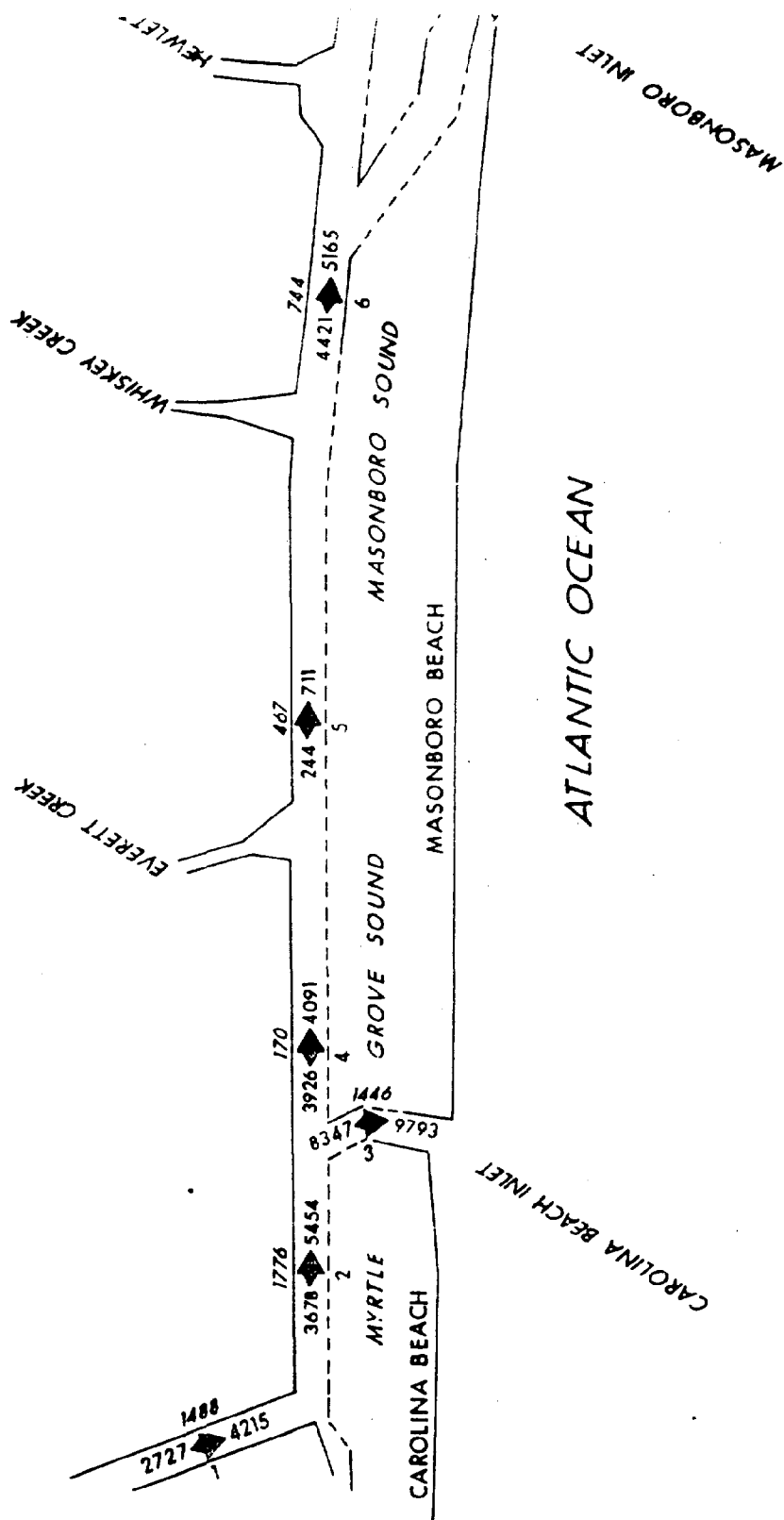
Table 75. Carolina Beach.

(Temperatures are °C and salinities are p.p.t.)

Temperature					Salinity			
Mo.	Max.	Min.	No.	$\bar{x}$	Max.	Min.	No.	$\bar{x}$
Surface								
J			ND	ND			ND	ND
F			1	9.0			1	31.9
M			1	15.5			1	26.0
A			1	17.6			1	30.0
M			1	20.5			1	15.4
J			1	24.6			1	19.0
J			1	25.0			1	19.2
A			1	29.5			1	36.2
S			1	25.0			1	25.8
O			1	20.5			1	33.9
N			1	18.2			1	23.0
D			1	12.0			1	4.4
Bottom								
J			ND	ND			ND	ND
F			1	9.0			1	33.0
M			1	15.0			1	30.0
A			1	17.0			1	31.5
M			1	20.0			1	17.6
J			1	26.5			1	20.8
J			1	25.0			1	22.0
A			1	28.0			1	36.2
S			ND	ND			ND	ND
O			1	20.5			1	33.9
N			1	18.5			1	25.0
D			ND	ND			ND	ND



CAROLINA BEACH INLET PROJECT  
TOTAL DISCHARGE IN PROJECT AREA IN ACRE FEET  
13 NOV. 1974



LEGEND

- ▲ 711 INDICATES DIRECTION OF DISCHARGE (AC. FT.)
- 467 INDICATES NET DISCHARGE QUANTITY (AC. FT.)
- 244 ◀ INDICATES DIRECTION OF DISCHARGE (AC. FT.)
- 5 RANGE NUMBER

Source: U.S. Army Corps of Engineers  
Carolina Beach Inlet  
on Improved Navigation  
Wilmington, N.C.



APPENDIX 6

Vascular Plant Species of Masonboro Island



Appendix 6: Vascular Plant Species of Masonboro Island

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>
PTERIDACEAE	
<u>Pteridium aquilinum</u> (L.) Kuhn	Bracken fern
ASPLENIACEAE	
<u>Asplenium platyneuron</u> (L.) Oakes	Ebony spleenwort
PINACEAE	
<u>Pinus taeda</u> L.	Loblolly pine
CUPRESSACEAE	
<u>Juniperus virginiana</u> L.	Red cedar
TYPHACEAE	
<u>Typha latifolia</u> L.	Common cattail
<u>Typha domingensis</u> Persoon	Cattail
ZOSTERACEAE	
<u>Zostera marina</u> L.	Eel grass
JUNCAGINACEAE	
<u>Triglochin striata</u> R. & P.	Arrow grass
POACEAE	
<u>Ammophila breviligulata</u> Fernald	American beachgrass
<u>Andropogon scoparius</u> Michx.	Little bluestem
<u>Andropogon virginicus</u> L.	Broom sedge
<u>Cenchrus tribuloides</u> L.	Sandspur
<u>Chloris petraea</u> Swartz	Finger grass
<u>Distichlis spicata</u> (L.) Greene	Salt grass
<u>Elymus virginicus</u> L.	Wild rye grass
<u>Eragrostis ellottii</u> Watson	Love grass
<u>Festuca octoflora</u> Walter	Fescue
<u>Melica mutica</u> Walter	Melic grass
<u>Muhlenbergia capillaris</u> (Lam.) Trinius	Purple muhly
<u>Panicum amarum</u> Ell.	Panic grass
<u>Panicum virgatum</u> L.	Panic grass
<u>Panicum</u> spp.	Panic grass
<u>Phragmites communis</u> Trinius	Reed
<u>Setaria geniculata</u> (Lam.) Beauvois	Foxtail grass
<u>Spartina alterniflora</u> Loisel	Smooth cordgrass
<u>Spartina patens</u> (Aiton) Muhl	Saltmeadow cordgrass
<u>Triplasis purpurea</u> (Walter) Chapman	Sand grass
<u>Uniola paniculata</u> L.	Sea oats



## CYPERACEAE

<u>Cladium</u> <u>jamaicense</u> Crantz	Saw grass
<u>Cyperus</u> <u>polystachyos</u> var. <u>texensis</u> (Torrey) Fernald	Sedge
<u>Cyperus</u> <u>retrorsus</u> Chapman	Sedge
<u>Cyperus</u> <u>strigosus</u> L.	Sedge
<u>Dichromena</u> <u>colorata</u> (L.) Hit	Whitetop sedge
<u>Eleocharis</u> <u>flacescens</u> (Poiret) Urban	Spikerush
<u>Eleocharis</u> <u>parvula</u> (R. & S.) Link	Spikerush
<u>Fimbristylis</u> <u>spadicea</u> (L.) Vahl	Fimbristylis
<u>Scirpus</u> <u>americanus</u> Persoon	Bulrush
<u>Scirpus</u> <u>robustus</u> Pursh	Bulrush

## COMMELINACEAE

<u>Commelina</u> <u>diffusa</u> Burman	Dayflower
<u>Commelina</u> <u>erecta</u> L.	Dayflower

## JUNCACEAE

<u>Juncus</u> <u>megacephalus</u> M.A. Curtis	Rush
<u>Juncus</u> <u>roemerianus</u> Scheele	Black needlerush
<u>Juncus</u> sp.	Rush

## LILLIACEAE

<u>Smilax</u> <u>auriculata</u> Walter	Catbrier
<u>Smilax</u> <u>bona-nox</u> L.	Catbrier
<u>Yucca</u> <u>filamentosa</u> L.	Beargrass
<u>Yucca</u> <u>gloriosa</u> L.	Spanish bayonet

## BROMELIAEAE

<u>Tillandsia</u> <u>usneoides</u> L.	Spanish moss
---------------------------------------	--------------

## ORCHIDACEAE

<u>Spiranthes</u> sp.	Ladies' tresses
-----------------------	-----------------

## MYRICACEAE

<u>Myrica</u> <u>cerifera</u> L.	Wax myrtle
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## ULMACEAE

<u>Celtis</u> <u>laevigata</u> Willd.	Hackberry
---------------------------------------	-----------

## FAGACEAE

<u>Quercus</u> <u>virginiana</u> Miller	Live oak
---	----------

## POLYGONACEAE

<u>Polygonum</u> <u>glacum</u> Nuttall	Knotweed
<u>Rumex</u> <u>hastatulus</u> Baldwin ex Ell.	Dock



# CHENOPODIACEAE

<u>Atriplex arenaria</u> Nuttall	Seabeach orach
<u>Chenopodium ambrosioides</u> L.	Mexican tea
<u>Salicornia bigelovii</u> Torrey	Glasswort
<u>Salicornia virginica</u> L.	Glasswort
<u>Suaeda linearis</u> (Ell.) Moq.	Suaeda

# AMARANTHACEAE

<u>Amaranthus pumilus</u> Raf.	Amaranth
<u>Iresine rhizomatosa</u> Standley	Iresine

# PHYTOLACCACEAE

<u>Phytolacca americana</u> L.	Pokeweed
--------------------------------	----------

# AIZOACEAE

<u>Mollugo verticillata</u> L.	Carpetweed
<u>Sesuvium portulacastrum</u> L.	Sea purslane

# PORTULACACEAE

<u>Portulaca pilosa</u> L.	Portulaca
----------------------------	-----------

# CARYOPHYLLACEAE

<u>Arenaria serpyllifolia</u> L.	Sandwort
<u>Paronychia riparia</u> Chapman	Paronychia
<u>Silene antirrhina</u> L.	Sleepy catchfly
<u>Silene virginica</u> L.	Fire pink
<u>Stipulicida setacea</u> Michaux	Stipulicida

# LAURACEAE

<u>Persea borbonia</u> (L.) Sprengel	Red bay
--------------------------------------	---------

# BRASSICACEAE

<u>Cakile harperi</u> Small	Sea rocket
<u>Descurainia pinnata</u> (Walter) Britton	Tansy mustard
<u>Lepidium virginicum</u> L.	Peppergrass

# ROSACEAE

<u>Rubus hispidus</u> L.	Dewberry
<u>Prunus caroliniana</u> Aiton	Carolina laurel cherry
<u>Prunus serotia</u> Ehrhart	Black cherry

# FABACEAE

<u>Galactia macreei</u> M. A. Curtis	Galactia
<u>Strophostyles helvola</u> (L.) Ell	Beachpea



# RUTACEAE

Zanthoxylum clava-herculis L. Hercules' club

# EUPHORBIACEAE

Acalypha sp. Three seeded mercury  
Croton punctatus Jacquin Silver leaf croton  
Euphorbia polygonifolia L. Dune spurge  
Euphorbia ammannioideis HBK Dune spurge

# ANACARDIACEAE

Rhus copallina L. Winged sumac  
Rhus radicans L. Poison ivy

# AQUIFOLIACEAE

Ilex vomitorea Aiton Yaupon

# VITACEAE

Ampelopsis arborea (L.) Koehne Peppervine  
Parthenocissus quinquefolia (L.) Planchon Virginia creeper

# MALVACEAE

Kosteletskyia virginica (L) Presl Marsh mallow

# HYPERICACEAE

Hypericum gentianoides (L.) BSP Pineweed

# TAMARICACEAE

Tamarix gallica L. Tamarisk

# PASSIFLORACEAE

Passiflora lutea L. Passion flower

# CACTACEAE

Opuntia drummondii Graham Cactus  
Opuntia compressa (Salisbury) Macbride Cactus

# LYTHRACEAE

Lythrum lineare L. Loosestrife

# ONAGRACEAE

Gaura angustifolia Michaux Gaura  
Oenothera humifusa Nuttall Evening primrose



# APIACEAE

Hydrocotyle bonariensis Lam.  
Ptilimnium capillaceum (Michaux) Raf

Pennywort  
Ptilimnium

# PLUMBAGINACEAE

Limonium nashii Small

Sea lavender

# SAPOTACEAE

Bumelia lycioides (L.) Persoon  
Bumelia tenax (L.) Willd.

Buckthorn  
Bumelia

# PRIMULACLAE

Samolus parviflorus Raf.

Water pimpernel

# OLEACEAE

Osmanthus americana (L.) Gray

Wild olive

# GENTIANACEAE

Sabatia stellaris Pursh

Sabatia

# ASCLEPIADACEAE

Cynanchum palustre (Pursh) Heller

Cynanchum

# CONVOLVULACEAE

Calystegia sepium (L.) R. Brown  
Ipomaea sagittata Cav.  
Cuscuta sp.

Hedge bindweed  
Morning glory  
Dodder

# VERBENACEAE

Callicarpa americana L.  
Lippia nodiflora (L.) Michaux  
Verbena scabra

French mulberry  
Verbena

# LAMICEAE

Monarda punctata L.  
Teucrium canadense L.  
Trichostema dichotomum L.

Monarda  
Teucrium  
Blue curls

# SCHROPHULARIACEAE

Agalinis maritima (Raf.) Raf

Gerardia

# SOLANACEAE

Physalis viscosa ssp. maritima  
(M. A. Curtis) Waterfall  
Solanum gracile Link

Ground cherry  
Nightshade



## RUBIACEAE

Diodia teres Walter  
Galium hispidulum Michaux  
Galium tinctorium L.

Diodia  
 Bedstraw  
 Bedstraw

## CAPRIFOLIACEAE

Lonicera sempervirens L.

Coral honeysuckle

## CURCUBITACEAE

Melothria pendula L.

Creeping cucumber

## CAMPANULACEAE

Specularia perfoliata (L.) A. DC

Venus' looking glass

## ASTERACEAE

Aster pilosus Willd.  
Aster tenuifolius L.  
Baccharis angustifolia Michaux  
Baccharis halimifolia L.  
Bidens sp. L.  
Borrchia frutescens (L.) DC  
Carduus spinosissimus Walter  
Eupatorium capillifolium (Lam.) Small  
Gaillardia pulchella Foug.  
Heterotheca subaxillaris (Lam.)  
 Britton & Rusby  
Iva frutescens L.  
Iva imbricata Walter  
Mikania scandens (L.) Willd.  
Sonchus asper (L.) Hill  
  
Solidago sempervirens L.

Frost aster  
 Marsh aster  
 False willow  
 Silverling  
 Beggars ticks  
 Sea ox-eye  
 Yellow thistle  
 Dog fennel  
 Gaillardia  
  
 Camphorweed  
 Marsh elder  
 Sea elder  
 Climbing hempweed  
 Spiny-leaved sow  
 thistle  
 Seaside goldenrod

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Source: Hoiser, P.E. and W.J. Cleary, 1977.



APPENDIX 7

Vertebrate Fauna of Masonboro Island



Appendix 7. Vertebrate Fauna of the Masonboro Island Area

BIRDS

Common Name	Scientific Name	Status	Primary Habitat
Common Loon	( <u>Gavia immer</u> )	WR	1
Red-throated Loon	( <u>Gavia stellata</u> )	WR	1
Horned Grebe	( <u>Colymbus auritus</u> )	WR	4
Eared Grebe	( <u>Colymbus nigricollis californicus</u> )	T	4
Pied-billed Grebe	( <u>Podilymbus podiceps</u> )	WR	4
Brown Pelican	( <u>Pelecanus occidentalis</u> )	PR	1
Northern Gannet	( <u>Morus bassanus</u> )	WR	1
Double-cr. Cormorant	( <u>Phalacrocorax auritus</u> )	WR	4
American Bittern	( <u>Botaurus lentiginosus</u> )	WR	3
Least Bittern	( <u>Ixobrychus exilis</u> )	SR	3
Great Blue Heron	( <u>Ardea herodias</u> )	WR	3
Green-backed Heron	( <u>Butorides virescens</u> )	SR	3
Little Blue Heron	( <u>Florida caerulea</u> )	SR	3
Great Egret	( <u>Casmerodius albus egretta</u> )	SR	3
Snowy Egret	( <u>Leucophoyx thula</u> )	SR	3
Tricolored Heron	( <u>Hydranassa tricolor ruficollis</u> )	PR	3
Black-cr. Night Heron	( <u>Nycticorax nycticorax hoactli</u> )	SR	3
Yellow-cr. Night Heron	( <u>Nyctanassa violacea</u> )	SR	3
Glossy Ibis	( <u>Plegadis falcinellus</u> )	SR	3
White Ibis	( <u>Gaura alba</u> )	PR	3
Mallard	( <u>Anas platyrhynchos</u> )	WR	4
Black Duck	( <u>Anas rubripes</u> )	WR	4
Gadwall	( <u>Anas strepera</u> )	WR	4
Northern Pintail	( <u>Anas acuta tzitzihua</u> )	WR	4
Green-winged Teal	( <u>Anas carolinensis</u> )	WR	4
Blue-winged Teal	( <u>Anas discors</u> )	T	4
American Wigeon	( <u>Mareca americana</u> )	WR	4
Wood Duck	( <u>Aix sponsa</u> )	PR	4
Northern Shoveler	( <u>Spatula clypeata</u> )	WR	4
Canvasback	( <u>Athya valisineria</u> )	WR	4
Scaup sp.	( <u>Aythya sp.</u> )	WR	1
Common Goldeneye	( <u>Glaucionetta clangula americana</u> )	WR	4
Bufflehead	( <u>Glaucionetta albeola</u> )	WR	4
Oldsquaw	( <u>Clangula hyemalis</u> )	WR	1
Surf Scoter	( <u>Melanitta perspicillata</u> )	WR	1
Black Scoter	( <u>Oidemia nigra americana</u> )	WR	1



Common Name	Scientific Name	Status	Primary Habitat
White-winged Scoter	( <u>Melanitta fusca deylandi</u> )	WR	1
Ruddy Duck	( <u>Erismatura jamaicensis</u> <u>rubida</u> )	WR	4
Hooded Merganser	( <u>Lophodytes cucullatus</u> )	WR	4
Red-br. Merganser	( <u>Mergus serrator</u> )	WR	4
Turkey Vulture	( <u>Cathartes aura</u> )	PR	0
Sharp-sh. Hawk	( <u>Accipter striatus velox</u> )	T	6
Cooper's Hawk	( <u>Accipter cooperii</u> )	T	6
Red-tailed Hawk	( <u>Buteo jamaicensis</u> )	PR	6
Northern Harrier	( <u>Circus Cyansus hudsonicus</u> )	WR	3
Osprey	( <u>Pandion haliaetus</u> )	SR	4
Peregrine Falcon	( <u>Falco peregrinus</u> )	T	1
Pigeon Hawk	( <u>Falco columbarius</u> )	T	1
American Kestrel	( <u>Falco sparverius</u> )	WR	6
Clapper Rail	( <u>Rallus longirostris</u> )	PR	3
King Rail	( <u>Rallus elegans</u> )	WR	3
Sora	( <u>Porzana carolina</u> )	T	3
Virginia Rail	( <u>Rallus limicola</u> )	T	3
American Coot	( <u>Fulica americana</u> )	T	4
American Oystercatcher	( <u>Haematopus palliatus</u> )	PR	1
Wilson's Plover	( <u>Charadrius wilsonia</u> )	SR	1
Semipalmated Plover	( <u>Charadrius hiaticula</u> <u>semipalmatus</u> )	T	1
Piping Plover	( <u>Choradrius melodus</u> )	T	1
Black-bellied Plover	( <u>Squatarola squatarola</u> )	WR	1
Ruddy Turnstone	( <u>Arenaria interpres</u> <u>morinella</u> )	WR	1
Long-billed Curlew	( <u>Numenius americanus</u> )	T	1
Whimbrel	( <u>Numenius phaeopus</u> )	T	3
Spotted Sandpiper	( <u>Actitis macularia</u> )	T	3
Willet	( <u>Catoptrophorus semipalmatus</u> )	PR	1
Greater Yellowlegs	( <u>Totanus melanoleucus</u> )	T	1
Lesser Yellowlegs	( <u>Totanus flavipes</u> )	T	1
Red knot	( <u>Calidris canutus rufus</u> )	T	1
Least Sandpiper	( <u>Erolia minutilla</u> )	WR	5
Dunlin	( <u>Erolia alpina</u> )	WR	1
Purple Sandpiper	( <u>Erolia maritima</u> )	WR	5
Short-billed Dowitcher	( <u>Limnodromus griseus</u> )	WR	3
Semipalmated Sandpiper	( <u>Ereunetes pusillus</u> )	T	1
Western Sandpiper	( <u>Ereunetes mauril</u> )	T	1
Marbled Godwit	( <u>Limosa fedoa</u> )	WR	3
Sanderling	( <u>Grocethia alba</u> )	WR	1
Great Black-backed Gull	( <u>Larus marinus</u> )	WR	1
Herring Gull	( <u>Larus argentatus</u> )	WR	1
Ring-billed Gull	( <u>Larus delawarensis</u> )	WR	1
Laughing Gull	( <u>Larus atricilla</u> )	SR	1



Common Name	Scientific Name	Status	Primary Habitat
Bonapart's Gull	( <u>Larus philadelphia</u> )	T	4
Gull-billed Tern	( <u>Larus delawarensis</u> )	SR	1
Forster's Tern	( <u>Sterna forsteri</u> )	WR	1
Common Tern	( <u>Sterna hirundo</u> )	TE	1
Least Tern	( <u>Sterna albifrons</u> )	SR	1
Royal Tern	( <u>Thalasseus maximus</u> )	PR	1
Sandwich Tern	( <u>Thalasseus sandvicensis</u> )	SR	1
Caspian Tern	( <u>Hydrogrogne caspia</u> )	WR	1
Black Tern	( <u>Chlidonias nigra</u> <u>surinamensis</u> )	T	1
Black Skimmer	( <u>Rynchops niger</u> )	PR	1
Dovekie	( <u>Plautus alle</u> )	T	1
Common Murre	( <u>Uria aalge</u> )	T	1
Mourning Dove	( <u>Zenaidura macroura</u> )	PR	6
Ground Dove	( <u>Columbigallina passerina</u> )	PR	2
Yellow-billed Cuckoo	( <u>Coccyzus americanus</u> )	SR	6
Common Nighthawk	( <u>Chordeiles minor</u> )	SR	6
Chimney Swift	( <u>Chaetura pelagica</u> )	SR	0
Ruby-th. Hummingbird	( <u>Archilochus colubris</u> )	SR	6
Belted Kingfisher	( <u>Megaceryle alcyon</u> )	WR	4
Common Flicker	( <u>Colaptes auratus</u> )	PR	6
Eastern Kingbird	( <u>Tyrannus tyrannus</u> )	SR	6
Horned Lark	( <u>Eremophila alpestris</u> )	T	2
Tree Swallow	( <u>Iridoprocne bicolor</u> )	WR	7
Rough-winged Swallow	( <u>Stelgidopteryx ruficollis</u> )	T	7
Bank Swallow	( <u>Riparia riparia</u> )	T	7
Barn Swallow	( <u>Hirundo rustica</u> )	SR	7
Purple Martin	( <u>Progne subis</u> )	SR	7
Fish Crow	( <u>Corvus ossifragus</u> )	PR	U
Blue Jay	( <u>Cyanocitta cristata</u> )	T	6
House Wren	( <u>Troglodytes aedon</u> )	WR	6
Carolina Wren	( <u>Thryothorus ludovicianus</u> )	PR	6
Marsh Wren	( <u>Telmatodytes palustris</u> )	SR	3
Sedge Wren	( <u>Cistothorus platensis</u> )	WR	3
Mockingbird	( <u>Mimus polyglottos</u> )	PR	6
Catbird	( <u>Dumetella carolinensis</u> )	WR	6
Brown Thrasher	( <u>Toxostoma rufum</u> )	PR	6
American Robin	( <u>Turdus migratorius</u> )	WR	6
Hermit Thrush	( <u>Hylocicla gutta faxoni</u> )	T	6
Ruby-crowned Kinglet	( <u>Regulus calendula</u> )	WR	6
Blue-gray Gnatcatcher	( <u>Polioptila caerulea</u> )	SR	6
Cedar Waxwing	( <u>Bombycilla cedrorum</u> )	T	6
Water Pipit	( <u>Anthus spinaletta rubescens</u> )	T	2
Starling	( <u>Sturnus vulgaris</u> )	PR	6
White-eyed Vireo	( <u>Vireo griseus</u> )	PR	6



Common Name	Scientific Name	Status	Primary Habitat
Red-eyed Vireo	( <u>Vireo olivaceus</u> )	TR	6
Black-and-White Warbler	( <u>Mniotilta varia</u> )	T	6
Orange-crowned Warbler	( <u>Vermivora celata</u> )	WR	6
Parula Warbler	( <u>Parula americana</u> )	SR	6
Yellow Warbler	( <u>Dendroica petechia</u> )	T	6
Magnolia Warbler	( <u>Dendroica magnolia</u> )	T	Cape
May Warbler	( <u>Dendroica tigrina</u> )	T	6
Black-throated Blue Warbler	( <u>Dendroica caerulescens</u> )	T	6
Yellow-rumped Warbler	( <u>Dendroica coronata</u> )	WR	6
Blackburnian Warbler	( <u>Dendroica fusca</u> )	T	6
Chestnut-sided Warbler	( <u>Dendroica pensylvanica</u> )	T	6
Pine Warbler	( <u>Dendroica pinus</u> )	SR	6
Prairie Warbler	( <u>Dendroica discolor</u> )	SR	6
Palm Warbler	( <u>Dendroica palmarum</u> )	T	2
Bay-breasted Warbler	( <u>Dendroica castanea</u> )	T	6
Blackpoll Warbler	( <u>Dendroica striata</u> )	T	6
Ovenbird	( <u>Selurus aurocapillus</u> )	T	6
Northern Waterthrush	( <u>Seiurus noveboracensis</u> )	T	6
Yellowthroat	( <u>Geothlypis trichas</u> )	PR	6
American Redstart	( <u>Setophaga ruticilla</u> )	T	6
Eastern Meadowlark	( <u>Sturnella magna</u> )	PR	2
Orchard Oriole	( <u>Icterus spurius</u> )	SR	6
Bobolink	( <u>Dolichonyx oryzivorus</u> )	T	2
Red-winged Blackbird	( <u>Agelaius phoeniceus</u> )	PR	3
Boat-tailed Grackle	( <u>Cassidix mexicanus</u> )	PR	U
Common Grackle	( <u>Quiscalus versicolor</u> )	PR	6
Brown-headed Cowbird	( <u>Molothrus ater</u> )	WR	2
Northern Cardinal	( <u>Richmondia cardinalis</u> )	PR	6
American Goldfinch	( <u>Spizus tristis</u> )	T	2
Pine Siskin	( <u>Spinus pinus</u> )	T	2
Blue Grosbeak	( <u>Guiraca caerulea</u> )	T	6
Indigo Bunting	( <u>Passerina cyanea</u> )	SR	6
Painted Bunting	( <u>Passerina ciris</u> )	SR	6
Rufous-sided Towhee	( <u>Pipilio erythrophthalmus</u> )	PR	6
Savannah (Ipswich) Sparrow	( <u>Passerculus princeps sandwichensis</u> )	WR	2
Sharp-tailed Sparrow	( <u>Ammodramus caudatus</u> )	WR	3
Seaside Sparrow	( <u>Ammodramus maritima</u> )	PR	3
Field Sparrow	( <u>Spizella pusilla</u> )	WR	6
White-throated Sparrow	( <u>Zonotrichia albicollis</u> )	WR	6
Swamp Sparrow	( <u>Melospiza georgiana</u> )	WR	6
Song Sparrow	( <u>Melospiza melodia</u> )	WR	6
Snow Bunting	( <u>Plectrophenax nivalis</u> )	T	2



Common Name	Scientific Name	Status	Primary Habitat
<b>MAMMALS</b>			
Virginia Opossum	( <u>Didelphus</u> )	PR	6
Short-tailed Shrew	( <u>Blarina brevicauda</u> )	PR	6
Least Shrew	( <u>Cryptotis parva</u> )	PR	6
Eastern Mole	( <u>Scalopus aquaticus</u> )	PR	2
Red Bat	( <u>Lasiurus borealis</u> )	SR	3
Seminole Bat	( <u>Lasiurus seminolus</u> )	SR	3
Eastern Cottontail	( <u>Sylvilagus floridanus</u> )	PR	2
Marsh Rabbit	( <u>Sylvilagus palustris</u> )	PR	6
Marsh Rice Rat	( <u>Oryzomys palustris</u> )	PR	3
Cotton Mouse	( <u>Peromyscus gossypinus</u> )	PR	2
Hispid Cotton Rat	( <u>Sigmodon hispidus</u> )	PR	6
House Mouse	( <u>Mus musculus</u> )	PR	2
Gray Fox	( <u>Urocyon cinereoargenteus</u> )	PR	2
Mink	( <u>Mustela vison</u> )	PR	4
River Otter	( <u>Lutra canadensis</u> )	PR	4
<b>REPTILES</b>			
Diamondbacked Terrapin	( <u>Malaclemys terrapin</u> )	PR	4
Atlantic Loggerhead Turtle	( <u>Caretta caretta</u> )	SR	1
Green Anole	( <u>Anolis Carolinensis</u> )	PR	6
Six-lined Racerunner	( <u>Enemidophorus sexlineatus</u> )	PR	2
Eastern Glass Lizard	( <u>Ophisaurus ventralis</u> )	PR	2
Black Racer	( <u>Coluber constrictor</u> )	PR	2
Coachwhip	( <u>Masticophis flagellum</u> )	PR	2
Rough Green Snake	( <u>Opheodrys aestivus</u> )	PR	6
Corn Snake	( <u>Elaphe guttata</u> )	PR	6
Yellow Rat Snake	( <u>Elaphe obsoleta</u> )	PR	6
<b>AMPHIBIANS</b>			
Southern Toad	( <u>Bufo terrestris</u> )	PR	6
Green treefrog	( <u>Hyla cinerea</u> )	PR	6
Squirrel Treefrog	( <u>Hyla squirella</u> )	PR	6

Source: Dr. James R. Parnell. 1984. UNC-W.

Status: Refers to the time of year that the species usually is present. There may be exceptions.

PR--Permanent Resident  
SR--Summer Resident  
WR--Winter Resident  
T--Transient



Common Name	Scientific Name	Status	Primary Habitat
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Primary Habitat: Refers to the habitat in which most individuals were found. Smaller numbers may occur in other habitats.

- 1--Beach, sand flats and inshore ocean (viewed from beach)
- 2--Dunes and grassy upland areas usually dominated by Sea Oats
- 3--Salt marshes, both regularly and irregularly flooded
- 4--Tidal creeks, bays and the adjacent Atlantic Intracoastal Waterway
- 5--Rock jetty, at the north end of Masonboro Island
- 6--Maritime thickets and forests of Masonboro Island and the adjacent dredged material islands
- 7--Birds usually seen overhead and not directly associated with a particular habitat
- U--So ubiquitous that a determination of a primary habitat was not possible

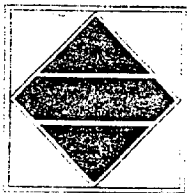
Animal Names--Only common names have been used. They are taken from the following publications, all of which provide scientific names.

Birds: AOU. 1983. Checklist of North American Birds. sixth ed. American Ornithologists Union, Baltimore, Md.

Mammals: Smith, ER, JB Funderburg, Jr. and TL Quay. 1960. A Checklist of North Carolina Mammals. North Carolina Wildlife Resources Commission, Raleigh.

Reptiles and Amphibians: Depoe, CE, JB Funderburg, Jr. and TL Quay. 1961. The Reptiles and Amphibians of North Carolina. The Jour. Elisha Mitchell Sci. Society 77:125-136.





# North Carolina Wildlife Resources Commission

Archdale Building, 512 N. Salisbury Street, Raleigh, North Carolina 27611, 919-733-3391

June 20, 1984

Mr. John Taggart  
Estuarine Sanctuary Coordinator  
Office of Coastal Management  
512 N. Salisbury Street  
Raleigh, North Carolina 27611

Dear John:

On June 16 and 17, members of the Masonboro Society, Cape Fear Chapter of the Sierra Club, UNC-W graduate students and I conducted a survey of Masonboro Island for Loggerhead Sea Turtle nests and colonial nesting waterbirds.

We found a total of 5 turtle nests in the 6 mile central section of beach front. This indicates that Mason Boro is a more important nesting beach than previously thought. If one were to assume that the nests we saw represented all of the nests laid during the previous week (wind and rain will quickly remove all traces of a nest) and that there are 7 weeks of nesting, a conservative estimate would be 35 nests for the 1984 season. This translates to more than 4,550 eggs.

The fact that there is no development of any kind on the island makes it especially attractive for turtle nesting and successful fledging of the turtles to the ocean. Many of the beaches in North Carolina have house and street lights near by. Adult turtles will avoid lights but a more serious problem is that the hatchling turtles will orient towards these lights instead of making their way to the sea.

In addition to the turtles we found three tern colonies. Two of the colonies contained 40-50 pairs of Least Terns and are located on the beach in the central portion of the island. The largest and most significant colony is on the northern end. This colony contains approximately 40 pairs of Common Terns, 150 pairs of Least Terns and 75 pairs of Black Skimmers. Wilson's Plovers were found nesting in association with these colonies as well.

All of these species are currently listed as "Special Concern" in North Carolina. Data gathered by Dr. James Parnell, UNC-W, from 1975 to the present indicate that Common Terns, Least Terns and Black Skimmers have all been declining in the State. This northern colony on Masonboro has special significance because it is one of the few large colonies in the southern half of the State using

J. Robert Gordon, Laurinburg  
Chairman

W. Vernon Bevill, Raleigh  
Executive Director

M. Woodrow Price, Gloucester  
Vice-Chairman

Richard W. Adams, M.D., Statesville  
David L. Allsbrook, Scotland Neck  
Cv W. Brame, Jr., North Wilkesboro  
Eddie C. Bridges, Greensboro

Joe Carpenter, Jr., Fayetteville  
Polie Q. Cloninger, Jr., Dallas  
Dr. John C. Hamrick, Jr., Shelby  
Henry (Buck) Kitchin, Rockingham

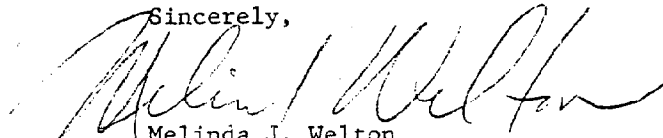
Dan Robinson, Cullowhee  
Donald Allen Thompson, Mount Gilead  
Jerry W. Wright, Jarvisburg



a natural beach for nesting. In recent years there has been a decline in the total number of colonial bird colonies in North Carolina and a shift from natural sites to dredge soil islands.

I feel that the acquisition of Masonboro Island as a sanctuary for marine life is extremely important. The Nongame and Endangered Wildlife Program enthusiastically endorses your efforts.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Melinda J. Welton', written in a cursive style.

Melinda J. Welton  
Endangered Species Project Leader

MJW/am

cc: W. Vernon Bevill  
Hal Atkinson



## FISHES

### Common Name

### Scientific Name

Smooth dogfish  
Southern stingray  
Atlantic stingray  
Ladyfish  
Conger eel

Mustelus canis  
Dasyatis americana  
Dasyatis sabina  
Elops saurus  
Conger oceanicus

Blueback herring  
Hickory shad  
American shad  
Atlantic menhaden  
Atlantic thread herring

Alosa aestivalis  
Alosa mediocris  
Alosa sapidissima  
Brevoortia tyrannus  
Opisthonema oglinum

Striped anchovy  
Bay anchovy  
Inshore lizardfish  
Oyster toadfish  
Skilletfish

Anchoa hepsetus  
Anchoa mitchilli  
Synodus foetens  
Opsanus tau  
Gobiesox strumosus

Carolina hake  
Crested cusk-eel  
Halfbeak  
Atlantic needlefish  
Sheepshead

Urophycis earllei  
Ophidion welshi  
Hyporhamphus unifusciatus  
Strongylura marina  
Cyprinodon variegatus

Mummichog  
Striped killifish  
Rough silverside  
Atlantic silverside  
Chain pipefish

Fundulus heteroclitus  
Fundulus majalis  
Membras martinica  
Menidia menidia  
Syngnathus louisianae

Snook  
Rock sea bass  
Black sea bass  
Sand perch  
Gag

Centropomus undecimalis  
Centropristis philadelphica  
Centropristis striata  
Diplectrum formosum  
Mycteroperca microlepis

Bluefish  
Cobia  
Yellow jack  
Blue runner  
Crevalle jack

Pomatomus saltatrix  
Rachycentron canadum  
Caranx bartholomaei  
Caranx crysos  
Caranx hippos

Scad  
Lookdown  
Greater amberjack  
Florida pompano  
Permit

Decapterus sp.  
Selene vomer  
Seriola dumerili  
Trachinotus carolinus  
Trachinotus falcatus

Mutton snapper  
Gray snapper  
Lane snapper  
Spotfin mojarra  
Silver jenny

Lutjanus analis  
Lutjanus griseus  
Lutjanus synagris  
Eucinostomus argenteus  
Eucinostomus gula



Tomtate  
Pigfish  
Sheepshead  
Whitebone porgy  
Spottail pinfish

Pinfish  
Scup  
Silver perch  
Spotted seatrout  
Weak fish

Cubbyu  
Spot  
Southern kingfish  
Northern kingfish  
Atlantic croaker

Black drum  
Red drum  
Bermuda chub  
Atlantic spadefish  
Spotfin butterflyfish

Banded butterflyfish  
Sergeant major  
Dusky damselfish  
Cocoa damselfish  
Slippery dick

Tautog  
Striped mullet  
White mullet  
Great barracuda  
Striped blenny

Crested blenny  
Feather blenny  
Seaweed blenny  
Fat sleeper  
Lyre goby

Sharptail goby  
Naked goby  
Doctorfish  
King mackerel  
Spanish mackerel

Harvestfish  
Butterfish  
Spotted scorpionfish  
Northern searobin  
Striped searobin

Haemulon aurolineatum  
Orthopristis chrysoptera  
Archosargus probatocephalus  
Calamus leucosteus  
Diplodus holbrooki

Lagodon rhomboides  
Stenotomus chrysops  
Bairdiella chrysura  
Cynoscion nebulosus  
Cynoscion regalis

Equetus umbrosus  
Leiostomus xanthurus  
Menticirrhus americanus  
Menticirrhus saxatilis  
Micropogonias undulatus

Pogonias cromis  
Sciaenops ocellata  
Kyphosus sectatrix  
Chaetodipterus faber  
Chaetodon ocellatus

Chaetodon striatus  
Abudefduf saxatilis  
Pomacentrus fuscus  
Pomacentrus variabilis  
Halichoeres bivittatus

Tautoga onitis  
Mugil cephalus  
Mygil curema  
Sphyraena barracuda  
Chasmodes bosquianus

Hypleurochilus geminatus  
Hypsoblennius hentzi  
Parablennius marmoreus  
Dormitator maculatus  
Evorthodus lyricus

Gobionellus hastatus  
Gobiosoma boscii  
Acanthurus chirurgus  
Scomberomorus cavalla  
Scomberomorus maculatus

Peprilus alepidotus  
Peprilus triacanthus  
Scorpaena plumieri  
Prionotus carolinus  
Prionotus evolans



Leopard searobin  
Bighead searobin  
Bay whiff  
Fringed flounder  
Gulf flounder

Summer flounder  
Southern flounder  
Windowpane  
Hogchocker  
Blackcheek tonguefish

Planehead filefish  
Northern puffer  
Striped burrfish

Prionotus scitulus  
Prionotus tribulus  
Citharichthys spilopterus  
Etropus crossotus  
Paralichthys albigutta

Paralichthys dentatus  
Paralichthys lethostigma  
Scophthalmus aquosus  
Trinectes maculatus  
Symphurus plagiura

Monacanthus hispidus  
Sphoeroides maculatus  
Chilomycterus schoepfi

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Source: Mr. Richard Carpenter and Mr. Fred Rohde, 1984, N.C. Division of Marine Fisheries, Wrightsville Beach, N. C. and Dr. David Lindquist, Department of Biological Sciences, University of North Carolina, Wilmington, North Carolina.



APPENDIX 8

Macroinvertebrates of the  
Masonboro Island Area



Appendix 7. Macroinvertebrates of the Masonboro Island Area

Phylum Porifera

Boring sponge  
Purple sponge  
Sun sponge

Garlic sponge  
Red beard sponge  
Vase sponges

Adocia tubifera  
Cliona celata  
Haliciona permollis  
Hymeniacidon heliophila  
Leucetta floridana  
Lissodendoryx isodictyalis  
Microciona prolifera  
Scypha sp.

Phylum Cnidaria

Class Hydrozoa

Snail fur

Campanularia integra  
Eudendrium ramosum  
Hydractinia echinata  
Lovenella gracilis  
Obelia bicuspidata  
Obelia dichotoma  
Pennaria tiarella  
Sertularia sp.  
Tubularia

Class Scyphozoa

Moon jelly  
Mushroom cap  
Cabbage head or cannon ball

Aurelia aurita  
Rhopilema verrilli  
Stomolophus meleagris

Class Anthozoa

Northern coral

Sea whip

Eyed coral

Aiptasia eruptaurantia  
Aiptasia pallida  
Astrangiaastreiformis  
Bunodosoma cavernata  
Calliactis tricolor  
Ceriantheopsis americanus  
Diadumene leucolena  
Haloclava producta  
Leptogorgia virgulata  
Paranthus rapiformis  
Oculina arbuscula  
Unidentified burrowing anemone

Phylum Ctenophora

Beroe's comb jelly  
Leidy's comb jelly  
Sea gooseberry

Beroe  
Mnemiopsis leidyi  
Pleurobrachia

Phylum Nemertea or Rhynchocoela

milky ribbon worm

Cerebratulus lacteus  
Lineus socialis  
Micrura leidyi



Phylum Entoprocta

Loxosomella sp.

Phylum Bryozoa

Spiral bryozoa  
Dirty bryozoa  
Creeping bryozoa

Amathia convoluta  
Anguinella palmata  
Bowerbankia gracilis  
Bugula avicularia  
Bugula neritina  
Membranipora tenuis  
Schizoporella cornuta  
Zoobotryon verticillatum

Phylum Phoronida

Phoronis architecta

Phylum Brachiopoda

Glottidia audebarti

Phylum Annelida

Class Polychaeta

Ornate worm

Opal worm  
Lug worm

Bamboo worm

Parchment tube worm

Ice cream cone worm  
Bamboo worm

Plume worm  
Thread worms

Americonuphis magna  
Amphitrite ornata  
Ancistrosyllis bassi  
Ancistrosyllis commensalis  
Ancistrosyllis jonesi  
Arabella iricolor  
Arenicola cristata  
Aricidea fragilis  
Armandia agilis  
Axiosthella mucosa  
Brania clavata  
Ceratonereis irritabilis  
Chaetopterus variopedatus  
Cirriformia grandis  
Cistenides gouldii  
Clymenella torquata  
Dasybranchus lumbricoides  
Diopatra cuprea  
Drilonereis spp.  
Eteone heteropoda  
Eunice rubra  
Exogone dispar  
Glycera americana  
Glycera dibranchiata  
Glycera robusta  
Goniada littorea  
Haploscoloplos fragilis  
Harmothoe aculeata  
Hydroides dianthus  
Lepidometria commensalis  
Lepidasthenia varia  
Lepidonotus sublevis  
Lepidonotus variabilis  
Loimia medusa  
Loimia viridis



Class Polychaeta

Lumbrinereis impatiens  
Lysilla alba  
Magelona spp.  
Malmgrenia lunulata  
Marphysa sanguinea  
Melinna maculata  
Mesochaetopterus taylori  
Nephtys picta  
Nereiphylla fragilis  
Nereis pelagica  
Nereis succinea  
Notomastus lobata  
Onuphis microcephala  
Onuphis nebulosa  
Orbinia ornata  
Owenia fusiformis  
Parahesion luteola  
Phyllodoce araneae  
Podarke obscura  
Polycirrus eximius  
Polydora ligna  
Polydortes lupina  
Pseudeurythoe ambigua  
Sabella crassicornis  
Sabella microphthalma  
Sabellaria vulgaris  
Scolepolepis squamata  
Scoloplos fragilis  
Scoloplos rubra  
Sebaco elongatus  
Spiochaetopterus  
Spiophanes bombyx  
Sthenelais boa

Phylum Echiura

Thalassema mellita  
Thalassema hartmani

Phylum Sipuncula

Sipunculus nudus

Phylum Mollusca

Class Polyplacophora

Atlantic chiton

Chaetopleura apiculata

Class Gastropoda

Greedy dove shell

Sea hare

Ragged sea hare

Channeled whelk

Knobbed whelk

Lightning whelk

Florida cerith

Spiny slipper shell

Anachis avara

Aplysia willcoxi

Bursatella

Busvcon canaliculatus

Busvcon carica

Busvcon contrarium

Cerithium floridanum

Crepidula aculeata

Crepidula formicata

Crepidula plana

Dendrodoris warreni

Doriposilla pharpha



Phylum Arthropoda

Class Cirripedia

Balanus amphitrite  
Balanus eburneus  
Balanus galeatus  
Chthamalus fragilis  
Chelonibia patula  
Octolasmis mulleri

Class Malacostraca

Big clawed snapping shrimp

Green snapping shrimp

Speckled crab

Alpheus heterochelis  
Alpheus normanni  
Araneus cribrarius  
Callinassa major  
Callinassa atlantica  
Callinectes sapidus  
Callinectes similis  
Cancer borealis

Blue crab

Clibanarius vittatus  
Cyathura burbanki  
Dissodactylus mellitae  
Emerita talpoida

Mole crab

Euceramus praelongus  
Hippolyte pleuracantha  
Hippolyte zostericola  
Leptalpheus forceps  
Libinia emarginata  
Libinia dubia

Spider crab

Megalobrachium soriatum  
Menippe mercenaria  
Neopontonides beaufortensis  
Ovalipes ocellatus

Stone crab

Ovalipes guadalupeensis  
Pagurus annulipes  
Pagurus longicarpus  
Pagurus pollicaris

Lady crab

Palaeomonetes pugio  
Palaeomonetes vulgaris  
Panopeus herbstii

Flat clawed hermit crab

Pelia mutica  
Penaeus aztecus  
Penaeus duorarum  
Penaeus setiferus

Hairy crab

Pilumnus sayi  
Pinnixa chaetopterana  
Pinnixa cristata  
Pinnixa lunzi  
Pinnixa sayana

Oyster crab

Pinnotheres maculatus  
Pinnotheres ostreum  
Polyonyx macrocheles  
Porcellana sayana  
Porcellana siaspelana

Mantis shrimp

Squilla empusa  
Tozeuma carolinense  
Uca pugilator

Fiddler crab

Upogebia affinis

Mud lobster



Class Merostomata

horseshoe crab

Class Pycnogonida

Phylum Echinodermata

Class Asteroidea

Class Ophiuroidea

Class Echinoidea

Purple sea urchin

White urchin

Sand dollar

Heart urchin

Class Holothuroidea

Hairy cucumber

Phylum Hemichordata

Acorn worm

Phylum Chordata

Sub-phylum Urochordata

Sub-phylum Cephalachordata

amphioxus

Limulus polyphemus

Anoplodactylus lentus

Tanystylum orbiculare

Asterias forbesi

Linckia sp.

Micropholis gracillima

Micropholis atra

Ophiophragmus wurdemanni

Ophiothrix angulata

Arbacia punctulata

Lytechinus variegatus

Mellita quinquiesperforata

Moira atropos

Leptosynapta tenuis

Sclerodactyla briareus

Thyonella sp.

Balanoglossus auranticus

Saccoglossus kowalewskii

Aplidium constellatum

Aplidium pellucidum

Ascidia interrupta

Didemnum lutarium

Distaplia bermudensis

Ecteinascidia turbinata

Eudistoma hepaticum

Molgula manhattensis

Perophora viridis

Symplegma sp.

Styela plicata

Trididemnum sp.

Branchiostoma



Thick lipped oyster drill  
Banded tulip  
Salt marsh periwinkle

Mud snail

Horse conch

Moon snail  
Common auger  
Oyster drill

Class Bivalvia

Bay scallop

Jingle shell

Scorched mussel  
Cross barred venus  
Common oyster  
Angel wing  
Great heart cockle  
Cross hatched lucine  
Disk clam

Swimming clam  
Date clam  
Sunray venus  
Hard clam  
Ribbed mussel

Pearl wing oyster  
Veiled awning clam  
Green razor clam  
Surf clam  
Stout razor clam

China cockle

Class Scaphopoda

Class Cephalopoda

Brief squid

Eupleura caudata  
Fasciolaria hunteria  
Littorina irrorata  
Melampus bidentatus  
Mitrella lunata  
Nassarius obsoletus  
Nassarius vibex  
Natica pusilla  
Neosimnia uniplicata  
Odostomia impressa  
Pleuroploca gigantea  
Polycera hummi  
Polinices duplicata  
Terebra dislocata  
Urosalpinx cinerea

Aequipecten irradians  
Anadara brasiliiana  
Anomia simplex  
Atrina rigida  
Atrina serrata  
Brachidontes exustus  
Chione cancellata  
Crassostrea virginica  
Cyrtopleura costata  
Dinocardium robustum  
Divaricella quadrisulcata  
Dosinia discus Donax variabilis  
Entovalva spp.. Ensis directus  
Lepton sp.  
Lima pellucida  
Lithophaga bisulcata  
Macrocallista nimbosa  
Mercenaria mercenaria  
Geukensia demissa  
Montacuta percompressa  
Mysella sp.  
Paramya subovata  
Pteria colymbus  
Solemya velum  
Solen viridis  
Spisula solidissima  
Tagelus plebius  
Tellina alternata  
Trachycardium muricatum

Dentalium sp.

Lolliguncula brevis

SOURCE: Dr. Anne McCrary. 1984. Department of Biology, UNC-W. Wilmington, N.C.







